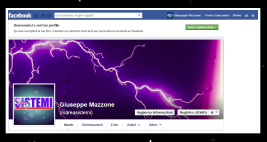


Electricity from the earth's atmosphere. An old forgotten idea?

Source: http://scienzaearte.blogspot.it/2011/03/energia-elettrica-dallatmosfera.html

Solar, wind, hydroelectric, geothermal, biogas. These are the main renewable and non-polluting energy sources. But a sure not to leave something out?
It is known that the Earth's atmosphere has a potential difference that increases with height. For non-professionals it i the atmosphere was a charged battery. This is evident during thunderstorms, when this charge finds its outlet in th frightening and fascinating phenomena that are lightning. Many have imagined and studied methods for storing ligh energy, but this presents numerous problems:

1) it is not known in advance where a lightning will strike or in any case where a thunderstorm will take place; 2) ev lightning strike could be intercepted, for example by attracting it with a kind of lightning rod, it would be extreme difficult to store all its energy, since the discharge is very short; 3) moreover, most of the lightning energy dissipate light, heat and sound. In short, a "power plant" based on the interception of lightning would not be very profitable. **W less known, however, is that the atmosphere has this charge even when there is not even a cloud in the sky**

. The idea of deriving electricity directly from the earth's atmosphere dates back more than a century ago. To my knowledge - I urge readers to post comments if they are aware of other studies - the latest and most promising study field was carried out by the Estonian engineer and inventor **Hermann Plauson** . His studies took place in the 1920 almost a century ago. Is it possible that since then there has been no progress in this field? Why did the idea of extra electricity from the Earth's atmosphere go into oblivion, even though it seemed promising at the time of Plauson's stu

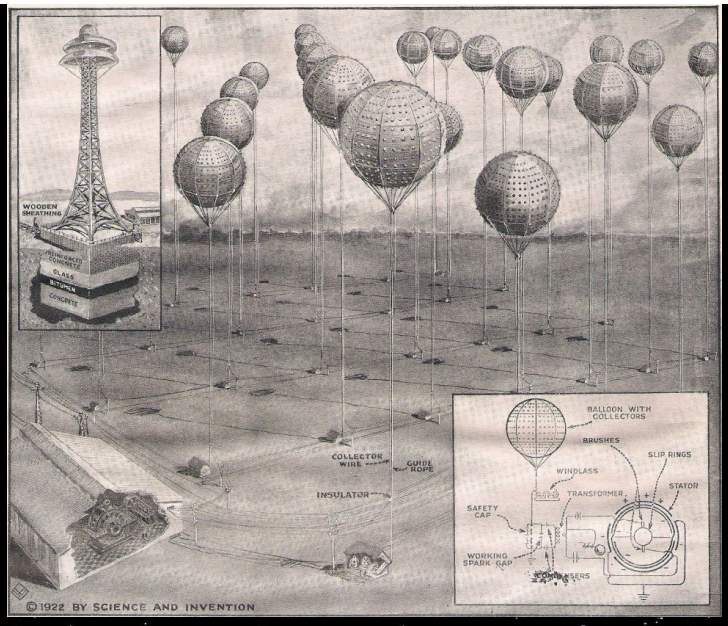


Image taken from the magazine "Science and Invention" (1922), where we describe the invention of Hermann Plau
Let's see before giving a brief description of the method used by Plauson. An electricity collector, consisting for exan
a balloon filled with helium, was raised to an altitude of several hundred meters, connected to the ground by a condu
cable. The balloon itself was made of conductive material and was covered with innumerable little needles, capabl
collecting atmospheric electricity through a phenomenon called field effect emission . High-voltage electricity w
conveyed to the ground by the conductor cable, and was converted into low-voltage electricity to be used by comm
electric users.

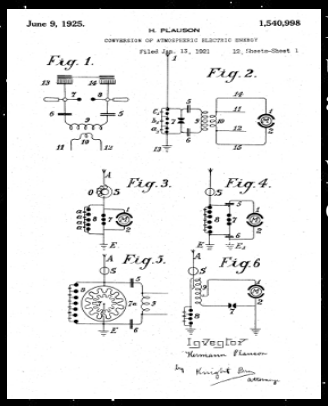
In the description of his invention , Plauson reports that he managed to get about 3.4 kW (kilowatt) in a "pilot" exper
using two of these balloons.
Returning to the first question: why such a promising technology was abandoned?
Several hypotheses can be made. The Plauson method provided - even if it was not bound - the use of radioactive ma
(radio and / or polonium), whose ionizing properties were used as a "catalyst" to increase the current inflow. It is ob
that today any alternative energy proposal based on the use of radioactive material would not be frowned upon,
considering the possible environmental impact that could result from accidental contamination. As a note
it is interesting *to mention* that until the eighties a type of lightning conductor covered with a thin layer of americiu
radioactive material), similar in concept to the Plauson collectors, was used in Italy: it is useless to say that these de
are currently become outlaws.
Another possible reason why the idea was abandoned may be related to the fact that the energy needs in the 20s wer
lower than today's ones: a typical "central" "at Plauson", composed of 100 separate balls the one from the other of a
100 meters (so 1 km of side), would have generated some hundreds of kilowatt: a power of all respect for those time
that pales a bit 'when compared to the energy produced by a single wind generator - about 1 Megawatt.
This reason, however, would justify only part of the abandonment of research in this field, since a system that allows
obtain even a few kilowatts using just a couple of balloons could be competitive - compared to wind energy - in area
windy and not served by the electricity network. **Let's** add at this point **an advantage that this system would hav
wind and solar: uninterrupted production 24 hours a day and 365 days a year** .
Apparently, therefore, the only major obstacle would seem to be represented by the use of radioactive material. And
we are meeting the recent technological development. In recent years, in fact, techniques have been developed to ol
nanomaterials that are very efficient from the point of view of field effect emission: in practice they are super-pins
could function as effective collectors of atmospheric electricity without resorting to use of radioactive material.
Some might argue, and rightly so, "But are these particular nanomaterials safe from the health point of view?"
Unfortunately, since these are new technologies, it is still difficult to estimate the impact in this sense, but some studi
under way. If, as is hoped, these materials will be considered harmless to health, then it can not be excluded that t
research on electric energy obtained directly from the earth's atmosphere will find a new vigor and this source not
exploited can go alongside the best known renewable and non-polluting sources.
As a final note it should be added that even without using radioactive material and the nanomaterials mentioned abo

system similar to that of Plauson could provide modest but useful quantities of electricity, finding application especia
the areas of developing countries far from large centers inhabited.

Hermann PLAUSON

Conversion of Atmospheric Electricity

Source: Source: rexresearch.com



**In 1920 the German engineer Hermann Plauson published a text "Gew
und Verwertung der Atmospharischen Elektrizitat" (Acquisition and
atmospheric electricity).**

**Where he concluded that atmospheric electricity could be capture
exploited by men.**

In this regard he wrote:

**"Humanity will be free from worry about the threat of freezing death, knowing that in a pred
time it will be possible to exploit the natural resources to the fullest ... Humanity will no longer
suffer from the cold, because mother nature will give her abundant gift power."**

**Plauson designed a series of helium-filled balloons, able to collect atmospheric electricity in t
through the use of thermionic rectifiers, Leida bottle condensers and induction coils, his idea
supply energy to whole Germany.**

Biography (Wikipedia)

Meridian International Research: Atmospheric Electricity Research

***Science & Invention* (Feb. 1922) : "Power from the Air" (I)**

***Science & Invention* (March 1922) : "Power from the Air" (II)**

Plauson's Patents (List)

H. Plauson: USP # 1,540,998 - Conversion of Atmospheric Electricity

H. Plauson: British Patent # 157,262 - Improvements in Electric Motors

H. Plauson: British Patent # 157,263 - Process & Apparatus for Converting Static Atmospheric Electrical Energy into Dynamic Electrical Energ

***Science & Invention* (June 1928) - "Harnessing Nature's Electricity"**

H. Plauson: British Patent # 299735 - Rapidly Moving Electron Process for Producing [PDF]

H. Plauson: *Gewinnung und Verwertung der Atmosphatischen Elecktrizitat* (1922) [PDF]

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http://en.wikipedia.org/wiki/Hermann_Plauson

Biography

Hermann Plauson was an Estonian engineer and inventor. Plauson investigated the production of energy and power via atmospheric electricity.

Plauson was the director of the Fischer-Tropsch "Otto Traun Research Laboratories" in Hamburg, Germany during the Weimar Republic of the 1920s. Nikola Tesla's idea for connecting machinery to the "wheelwork of nature". Plauson's US Patent # 1,540,998 methods of converting alternating radian electricity into rectified continuous current pulses. He developed the Plauson's converter, an electrostatic generator. In 1920, Plauson published a bo *Production and Utilization of the Atmospheric Electricity* " (*Gr., Gewinnung und Verwertung der Atmospharischen Elektrizitat*). A copy of this boo British Library.

It is believed to be Gertrud Plauson (the exact relationship is unknown.

"Power from the Air". *Science and Invention* , Feb. 1922, no. 10. Vol IX, Whole No. 106. New York. (nuenergy.org)
"Power from the Air". *Science and Invention* , March 1922.

Science and Invention, **Vol. IX (106) # 10 (February 1922)**

Power from the Air (I)

by

Hugo Gernsback

In the war there was developed in Germany in the new art --- or science --- that bids fair to revolutionize our present means of obtaining power.

This art, which is as new now as wireless, is 25 years ago, will be attainments during the next 25 years that may appear fantastic today. Hermann Plauso of the new science, has devoted years of labor to his researches and he has now been using small power plants, generating electricity direct from the a night, without interruption at practically no cost, once the plant is constructed.
We have occasion, to describe the system, roughly, from cabled dispatches, but complete information is available now. The amount of electrical power in our atmosphere is astounding. Herr Plauson found in his experiments a single balloon sent to a height of 300 yards gave a constant current at 400 amperes, or in 24 hours over 17-1 / 4 kilowatts! By using two balloons in connection with a special condenser battery, the power obtained was 81-1 / 2 24 hours. The actual current delivered was 6.8 amperes at 500 volts.

The best balloons used by the inventor are made of thin aluminum leaf. No fabric was used. A simple internal system of ribs, stays and wires, gives the b certain amount of elasticity. The balloon, when made airtight, is filled with hydrogen or better, with helium. It will then stay aloft for weeks at a time surface is made of extremely sharp pins, made sharp electrolytically. Ordinary pins did not test good current collectors, as they lacked extreme sharpnes themselves were made from amalgamated zinc, containing a radium preparation, in order to ionize the air. It was also found that by the outer surface of with zinc-amalgam. Even better results were obtained with polonium amalgam.

One hundred of these captive balloons, separated one hundred yards from each other, will give a steady yield of 200 horsepower. This is the minimum horsepower, due to the higher electrification of the atmosphere.

We need to go into the technic of how the problem is now solved by Herr Plauson. By using batteries of condensers, high tension transformers, etc., the be changed to any form desires. Such as lighting, running motors, charging storage batteries, etc.

Plauson also invented a sort of electrostatic rotary transformer which gives alternating current without the use of condensers and transformers. Indeed, i very great, as it is actually sucks the current from the collector balloons. There is no doubt that this invention will become a universal use all over the wo see the land with captive balloons, especially in the country. Indeed, the time is not all that is coming from the atmosphere. It may be the least form of po as the cheapest form of power known today. Not only that, but not as devastating thunder storms occur

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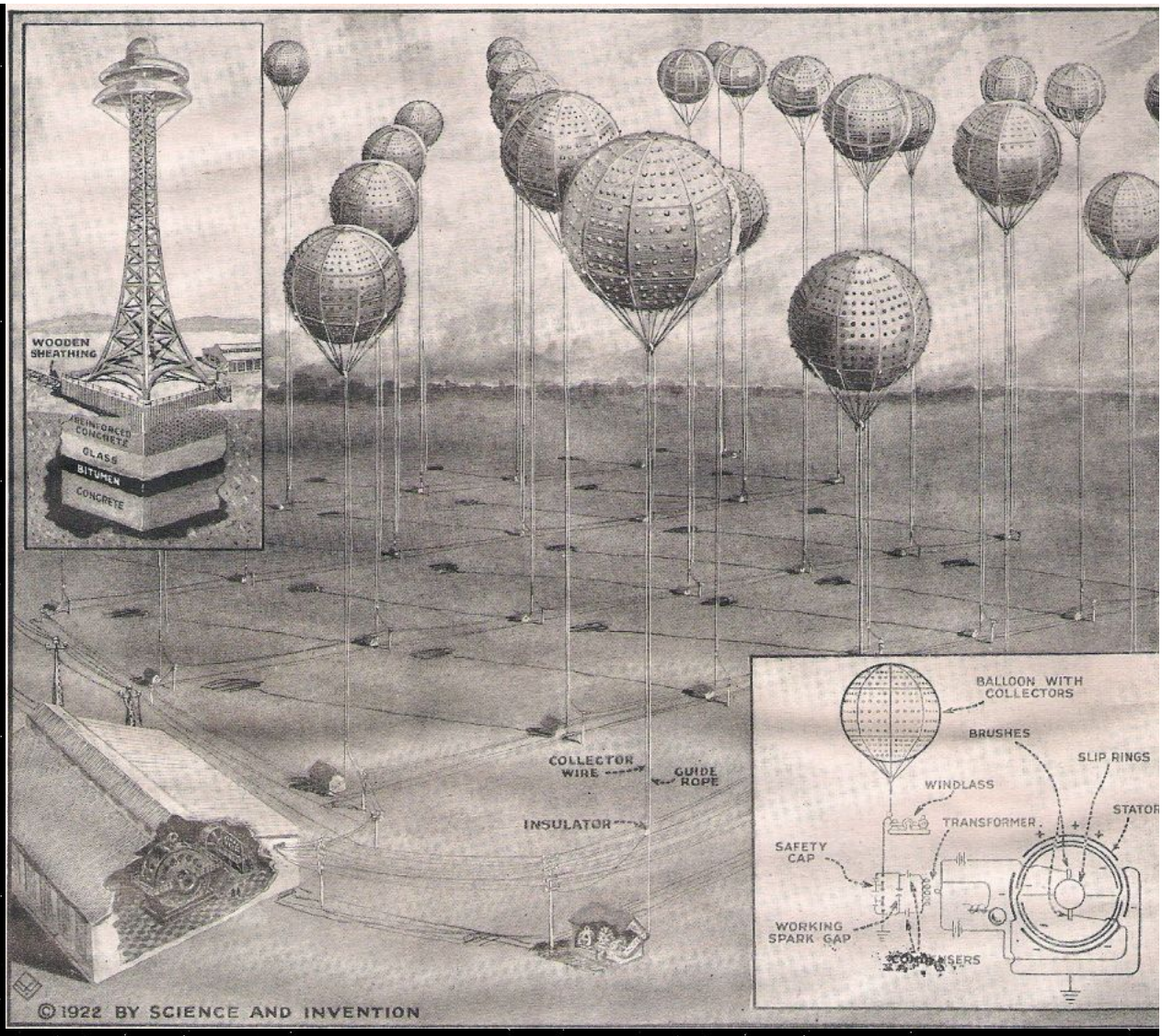
Science & Invention **(March 1922), page 1006, 1007**

Power from the Air (II)

by

Hugo Gernsback

[For many years electrical engineers have been able to use the free electrical energy ever present in the atmosphere, but they were not the elevated co endanger the lives of the experimenters, or else destroy the apparatus connected with it. A German engineer has, however, devised the somewhat elabor here shown in the brief, and he has succeeded, at least so his report states, in safely extracting several kilowatts of electrical power from the atmos metallic surfaced balloons, elevated to a height of only 1000 feet.]



We have been treated with the extraction of electrical energy from the atmosphere. The difference of the electric potential in different parts of the atmo the difference between the upper air and the earth. The power would take the form of high potential. It has long appeared rather than to conservative e such a source of power should really be available. It is not the same, but when the lightning flash is flashing, it is likely to be very small. seriously, as th now being seriously investigated. A German scientist, Hermann Plauson,

We will first speak of the methods used for collecting electricity from the upper air. The author cites several German patents. One of them shows the u balloon. The balloon is shown floating in the air, kite fashion, and from a great net or aerial for the collection of electricity. The conductor from the ae the ground station; quite an elaborate description of the net-work which the patentee proposes to have covered with needle points. A windlass takes in cable for the balloon, and the patentee claims that will send you to 225,000 volts to draw upon. He then speaks or a battery of 20,000 cells in series, wh up to 40,000 to 50,000 volts in the charging. This certainly provides for a large large fall of potential.

But our author discards this idea and first suggest something more permanent. He proposes the erection of towers to the height of 1,000 feet. At the sur his collecting aerial. The appliance consists of a number of copper tubes; to the top of the tubes, with the aim of collecting net-work covering the tops o "One of his apprehensions" should be his "trouble trouble", he would like to propose himself to "Siamese pagoda". He also compares the form of the pro great petticoat insulator. His is insulated from the earth. He, therefore describes a complicated foundation for his structure. A foundation of simple concr subject, it is a layer of cast glass, three to ten feet thick, and then comes to a reinforced concrete foundation. Sides of the ground, this foundation must least seven feet The author's idea is based on the number of these towers connected by a horizontal cable. three to ten feet thick, and then to a reinforc foundation, to which the metallic foot of the tower is to be anchored. Sides of the ground, this foundation must be raised at least seven feet The auth based on the number of these towers connected by a horizontal cable. three to ten feet thick, and then to a reinforced concrete foundation, to which the m of the tower is to be anchored. Sides of the ground, this foundation must be raised at least seven feet The author's idea is based on the number of th connected by a horizontal cable.

The author strongly advocates balloons as collectors of the electric power of the air. These he depicts covered with spots. These spots indicate areas to be coated and prepared to collect potential from the atmosphere.

In the first place he described the balloon as "made of thin metallic leaf" supported by internal ribs. Steel wires silver-plated, copper-plated, or alumin run from the balloon to the pendant or junction ring. To this ring the cable is attached to the surface of the earth. 300 feet to three miles.

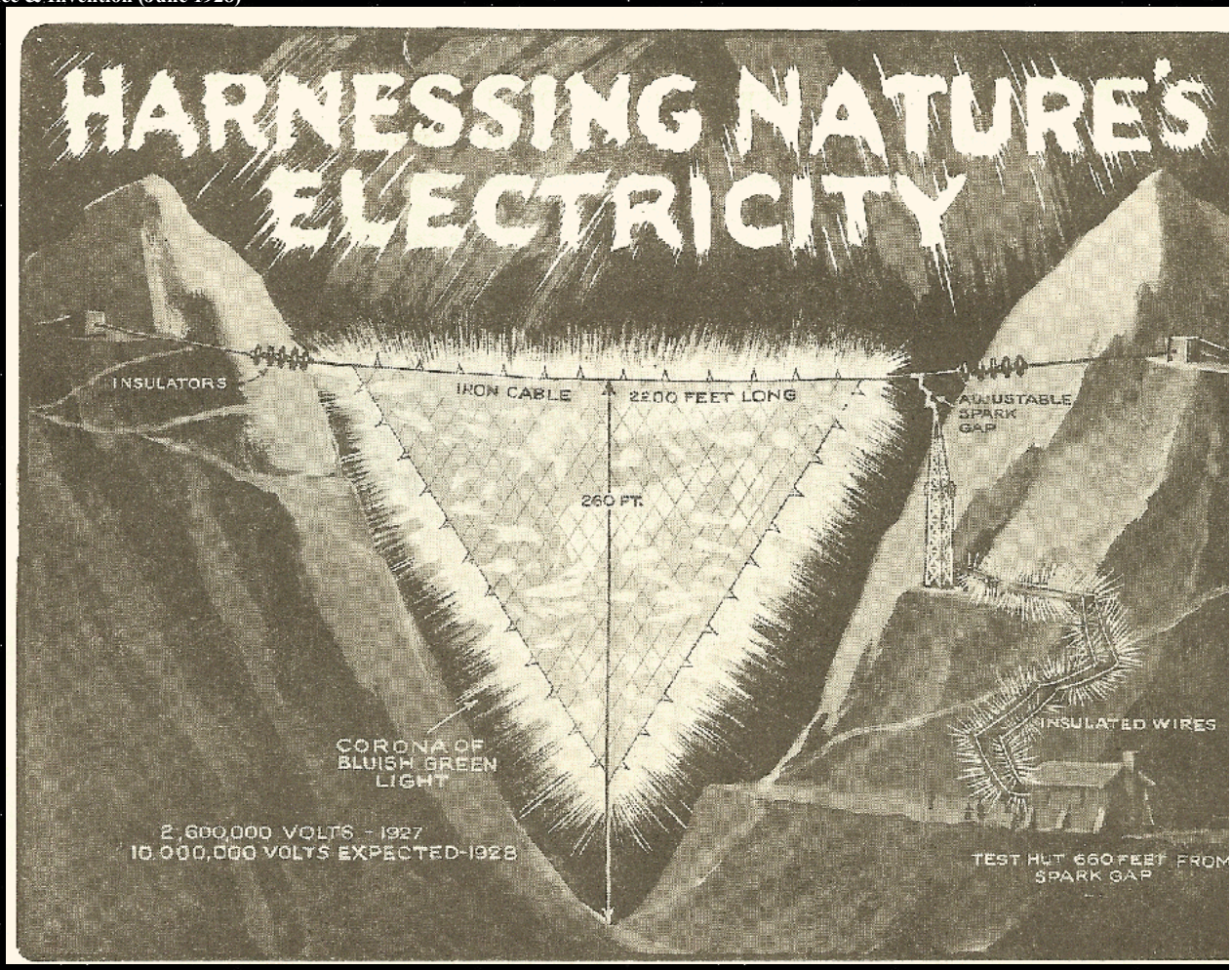
The coating of the spots is to be of the thinnest amalgam, of mercury and gold, or zinc, or even polonium, perhaps only 1/2500 inch thick. Numberless m To prepare the needle-like wires, they are collected into bundles and are treated electrolytically in a bath, so as to be dissolved into part. This gives a shar a roughened surface. The points may be of copper, steel, or some hard metallic alloy. After this corrosion. As it may be termed, the wires are plated w other of the so-called noble metals. It is advised that polonium or radium salts be added to the plating bath.

Dr Plauson devotes This is a rotary motor including a stator and rotor and its peculiarity is that it contains no coils, develops no electromagnetic fie speaking, but works by static excitation. One typical arrangement is shown in our illustration. The stator plates and rotor plates are concentric with representing segments of cylinders. The alternation of negative and positive charged plates produces the rotation. In the connection there is included a s gap to take care of dangerous potentials. Inductances and capacities are also used and indicated. The plates heated, owing to the Foucalt currents, are subdividing the stator and rotor plates, are described by the author.

The whole subject is quite captivating, and it really seems as if the use of the air may be in sight. It would seem to be possible to carry out experim direction by means of the Eiffel Tower.

And now our author gives us some practical details. He says that he is doing it with a radium preparation as an ionizer. The surface of the balloon wa over with zinc amalgam. It was sent to a height of 300 meters, early 1,000 feet, and was held by a copper-plated steel wire. A constant current of 1.8 am average of 400 volts potential difference was obtained. This gave nearly three-quarters of a kilowatt, or close to one horsepower. The collector of the ball to be a tension of 42,000 volts. A passing a second balloon with an antenna. Antenna, and the antenna connection with the 500 volts mean tension. The k the use of these two balloons.

Science & Invention (June 1928)



Science and Invention for June, 1928

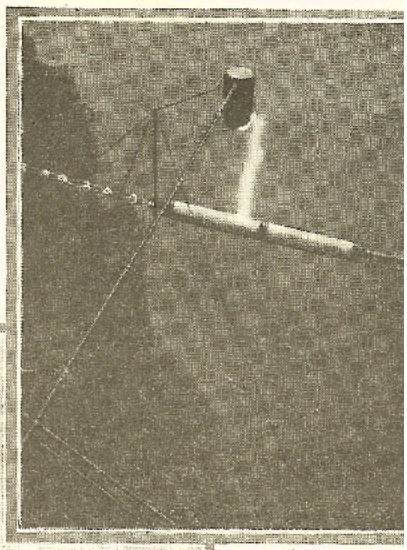
Remarkable European Experiments with Atmospheric Electrical Discharges with Potentials as High as 3,000,000 Volts

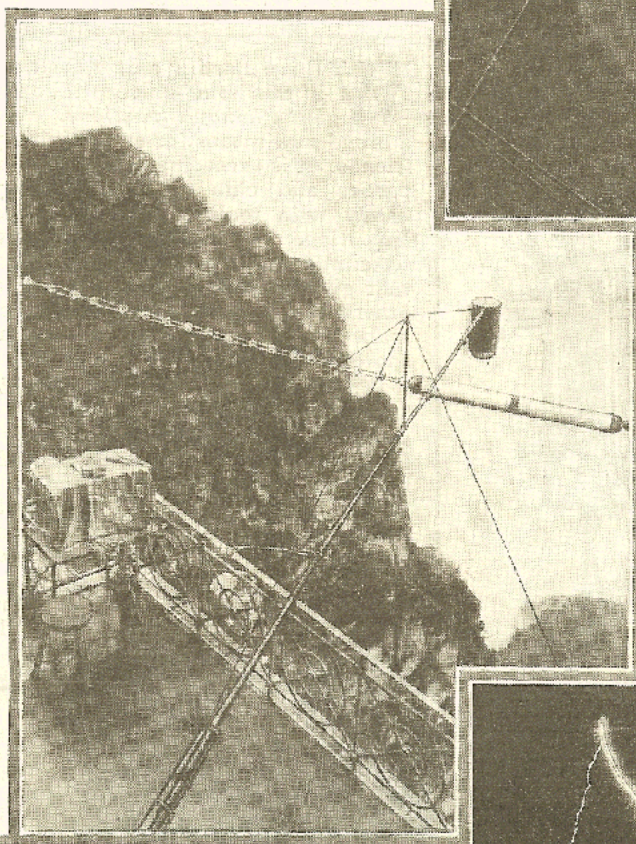
By HENRY TOWNSEND

elevation of 350 ft., and these students of natural electrical phenomena have found a very desirable location in the Alps, where they can suspend between one mountain and an adjacent one, a strong iron cable having a length of about 2,000 ft. This cable is about 250 feet above the intervening valley, and from it these daring engineers have suspended a coarsely woven wire net, which serves as an electrical capacity to gather the electricity from the atmosphere. As shown in the pictures, the wire net is supplied with numerous sharp points to aid in collecting the current from the air.

As the accompanying photographs of the actual apparatus and wire cable used last year clearly show, an adjustable spark gap of considerable length is provided. By adjusting this spark gap to various lengths, it is possible to judge the voltage of the discharge which leaps the gap at any moment. Mr. F. W. Peek, Jr., the well-known American worker in the realm of high voltage measurements, together with other engineers, have provided tabulated data and curves for various lengths of both needle and sphere type spark gaps. As one of the accompanying diagrams shows, it is a simple matter to calculate the voltage when a certain length of gap is used. The engineer first checks the length of the gap on the chart; he then follows a line horizontally from the gap length, to where it intersects with the angular line on the chart; and from the point of intersection he looks in a visual line downward to a place where the voltage is given. For needle spark gap measurements, the characteristic curve on the chart is practically a straight line, while for sphere gaps the characteristic curve on the voltage versus gap length, is a curved line. Those interested in high voltage measurements by means of the spark gap method can find the voltage-gap tables and charts in the *Standardization Rules* of the American Institute of Electrical Engineers. According to Mr. Peek's researches, the voltage per foot of atmospheric electrical discharges is about 100,000, while in laboratory measurements with A.C., transformer high potential discharges, the average voltage per foot of spark was found to be about 150,000 volts. The voltage of a lightning flash may

(*Continued on page* 156)



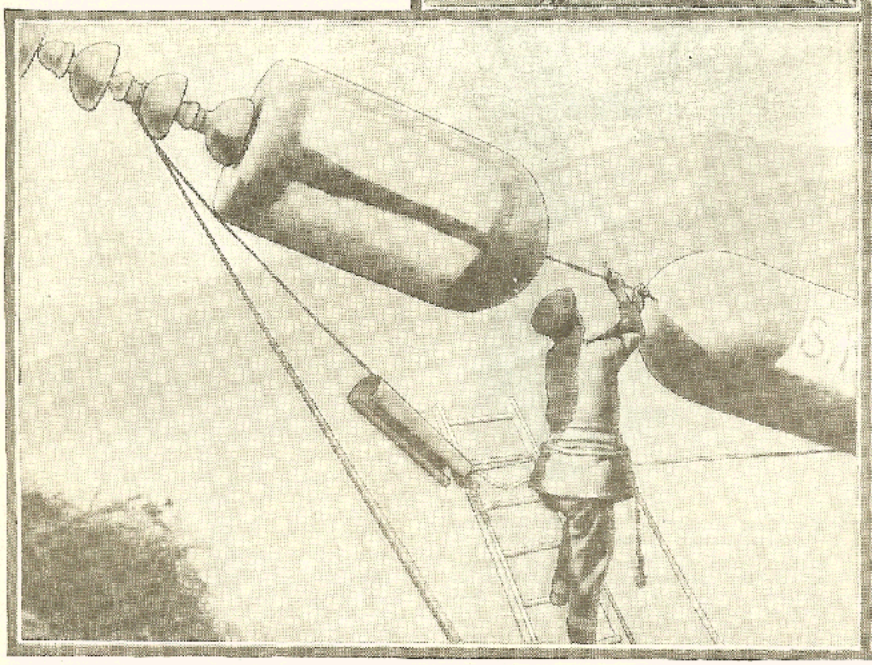


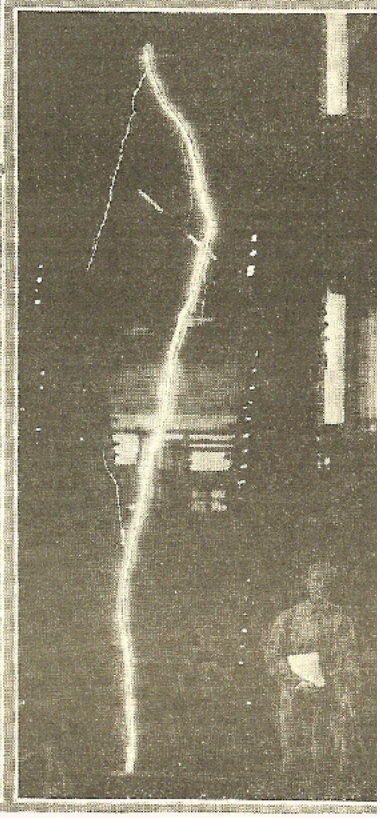
Actual photo at shows 13 ft., he spark obtained the collecting net the Alps by the man scientists. voltage is about 2, 000. The spark occu once per second fo minutes.

Photo, left, shows adjustable spark used in the Alps. tice the heavy e trode on the end of adjustable arm to wh the spark jumps

Below we see 3,000, volt artificial lightn stroke produced in E. Laboratory at Pi field, Mass. Note n

Actual photograph of the experimental "kite" used by the German experimenters in the Alps Mountains, for the purpose of accumulating high potential electrical discharges from the atmosphere. Note the size of the insulators.

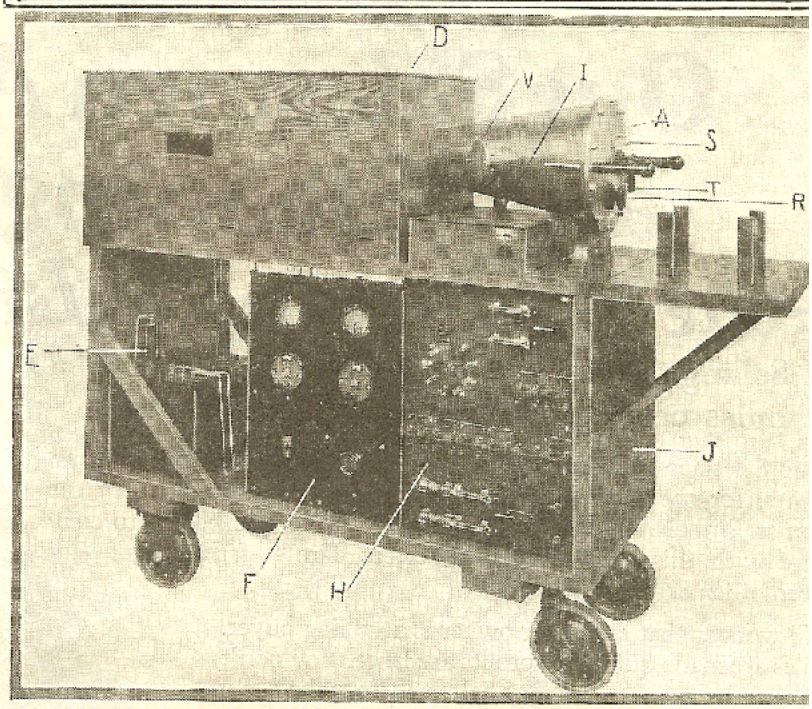




HARNESSING NATURE'S ELECTRICITY

By HENRY TOWNSEND

(*Continued from page* 111)



Remarkable cathode ray oscillograph used by Mr. F. W. Peek, Jr., in causing lightning to write its autograph with a pencil of electrons on a photographic film.

easily be 100,000,000 volts, as Mr. Peek has pointed out in one of his scientific papers.

WHY THE EXPERIMENTS ARE BEING MADE

ONE of the main reasons why these dangerous experiments are being carried on by the three young German scientists, whose names we have already learned, is because science believes that with a sufficiently high voltage, it will be possible for man to disintegrate the atom, and in this way make available a tremendous source of power as yet untapped. These experts have calculated that they will be able to obtain electrical energy in sufficient quantity from one of these powerful atmospheric discharges, to equal the Alpha rays obtained from 220 pounds of radium. As we have mentioned before, these experiments are of course fraught with great danger, and for that reason the experimenters seek refuge in a special lightning-proof hut, which is located about 600 ft., from the spark gap. When electrical storms are in the vicinity, it is especially important that the scientists keep within their protected fortress, for otherwise they would very probably be killed by a stray electrical discharge.

One of the peculiar things about this whole line of experiment is that the average layman does not realize perhaps, that there is a high electrical stress in the atmosphere on clear days, as well as when thunder storms are overhead. This fact has been known for a hundred years and more, and many years ago measurements of the various electrical potentials at increasing altitudes, were observed and measured by scientific investigators. There are a number of different ways in which these high electrical potentials found in the atmosphere can be measured; one of these methods involves the use of a calibrated spark gap. In this case the gap is set to a predetermined length, and when a discharge jumps this gap, the engineers know of course from previous experience and measurements, just what voltage is present. Another method of measuring extra high potentials, such as here countered, requires the use of a static v meter, which involves the use of a station and of a movable or rotary set of m plates, forming a condenser, to which indicating needle is attached. For volta above 2,000, static voltmeters have been u in a great many American central stati and they have many desirable and us characteristics. Of course as the volt to be measured increases, the space betw the quadrant shaped stationary and mov plates is increased and vice versa. electrostatic field from voltages below 2 is not sufficient to warrant the use o static voltmeter. Another method of m uring high potentials involves the use the so-called vacuum tube voltmeter.

The general characteristics of the mospheric electrical discharges, inclu lightning, have been measured and reco by one of the newest scientific instrum known as the cathode ray oscillograph. means of this quite remarkable, high v age scientific apparatus. Mr. Peek, one the well-known General Electric Comp staff of research engineers, has made s very interesting and remarkable discove concerning the nature of natural electr discharges, particularly of lightning charges. Many people will probably wo why Mr. Peek and some of his colleag in the engineering profession, including three daring German students, Mes Brasch, Lange and Urban, play with s dangerous electrical discharges, and they are at all interested in them. We plained previously why the German sav are intent on finding out all they can al these tremendous voltages obtained f the atmosphere, while Mr. Peek, we say, also has a very practical reason carrying on experiments with these de dealing bolts of Thor. Mr. Peek has b for many years intent on finding out w causes the huge insulators on long dista high potential transmission lines to b down when electrical storms break loose these regions.

Plauson's Electrical Patents

USP # 1,540,998
Conversion of Atmospheric Electric Energy
6-09-1925

GB157262
Improvements in Electric Motors
1922-07-10

GB157263
Process and Apparatus for Converting Static Atmospheric Electrical Energy into Dynamic Electrical Energy of any Suitable High Periodicity
7-10-1922

British Patent # 299,735
Apparatus for Producing Rapidly Moving Electrons
7-15-1930

FI21227
Elektrisk uppvärmningsanordning
4-25-1946

Varmelegeme med elektriske varmemodstande
DK67691C
9-27-1948

FR877362
Dispositif de chauffage électrique
12-04-1942

DE734794
Elektrisches Heizsystem
4-24-1943

CH222509
Elektrischer Heizkörper zur Erwärmung von Flüssigkeiten
7-31-1942

DE738107
Elektrolyt fuer unmittelbare elektrische Warmwasser-Radiatorenheizung mit Elektroden
8-03-1943

DE433476
Verfahren zur Herstellung von Elektroden und Schleifkontakten fuer Dynamomaschinen
8-31-1926

CH94021
Elektrode und Verfahren zu deren Herstellung
4-01-1922

CA226423
Electrode for Electrolytic Apparatuses
11-21-1922

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http://www.meridian-int-res.com/Energy/Atmospheric.htm

Atmospheric Electricity Research
[Excerpts]

In the nineteenth and early twentieth centuries, a large number of investigators

Dr Hermann Plauson who in the 1920s succeeded in generating significant quantities of electrical power with modern solar photovoltaic systems of a si
...

Dr Hermann Plauson. Dr Plauson was an Estonian citizen who lived in Hamburg and Switzerland. He carried out experiments in Finland with ma
magnesium-aluminum alloys, covered with electrolytically deposited needles. The needles were further doped with a radium compound to increase the ic
the air. (This was the era in which the hands were painted with radium to make them luminous in the dark). Zinc amalgam patches were also paint
aerostats. Plauson obtained with power output of 0.72kW and 3.4kW from one and two aerostats 300m above ground level. Dr Plauson filed patents i
Great Britain and Germany in the 1920s. His book "Gewinnung und Verwertung der Atmosphärischen Elektrizität"

Other atmospheric electricity researchers contemporary to Dr Plauson included Walter Pennock and MW Dewey in the USA, Andor Palencsar in Hung
Heinrich Rudolph in Germany. Hippolyte Charles Vion in Paris predated them all, putting forward proposals in the 1850s and 1860s.

Heinrich Rudolph made an interesting contribution to the design of the aerostat collectors. In 1898 he designed an elliptical aerostat made up of faceted
minimize the effect of wind. The design bears a strong resemblance to Northrop's 2003 UCARS unamnned helicopter UAV project. The design uses
Effect to help keep the aerostat on station and minimise wind effects.

Dr Oleg Jefimenko: In recent times, Dr Oleg Jefimenko has been active in this field. Dr Jefimenko carried out experiments on electrostatic motors from
the 1970s.

MIR's Research Program

Since 1997 we have been carrying out theoretical research into conversion of atmospheric electricity into useable electrical power.

From a low level (5m high) simple zinc antenna we are able to obtain sufficient charge. Further experimental investigations with metallic aerostat coll cavity resonant slow-wave antennae concepts are ongoing ...

Advantages of Atmospheric Electricity

Simple and robust technology
Low Cost Technology - much cheaper than photovoltaics or wind turbines
Available day and night in all weather conditions - in fact, blackberries power is produced at night than during the day
Available at any point on the Earth's surface

1. *Gewinnung und Verwertung der Atmosphärischen Elektrizität* , Dr Hermann Plauson, Hamburg, (1920)
2. Conversion of Atmospheric Electric Energy, USP 1,540,998, Dr Hermann Plauson, (1925)
3. Assembly for the Induction of Lightning into a Superconducting Magnetic Energy Storage System, USP 5,367,245 Goven Mims, (1994)
4. Electrostatic Motors are Powered by Electric Field of the Earth; CL Stong, *Scientific American* , (October 1974)
5. Operation of Electric Motors from the Atmospheric Electric Field; Dr. Oleg Jefimenko, *American Journal of Physics* , vol. 39, July 1971.
6. *Electrostatic Motors: Their Principles, Types and Theory of Operation*; Dr Oleg Jefimenko, Electret Scientific, (1972).
7. Parametric Electric Machine, USP 4,622,510, Ferdinand Cap, (1986).

US Patent # 1,540,998

Conversion of Atmospheric Electric Energy

(9 June 1925)

Hermann PLAUSON

Be it known that I, Hermann Plauson, Estonian subject, residing in Hamburg, Germany, have been invented in the Conversion of Atmospheric Electric Ene following is a specification,

A method of obtaining atmospheric electricity by means of metallic nettings set with spikes which are held by means of ordinary or anchored kite balloons m filled with hydrogen, are in theory already known. Direct current for the charging of accumulators. This knowledge is only presented as theoretical as the conv has hitherto been a failure. Apparatus of destruction by lightning. The balloons used for collecting the charge must also be made of very large size.

Non-conducting materials of non-conducting materials that are liable to be used as non-conducting materials

(a) The metallic cases are impenetrable to helium and hydrogen; they also represent large metallic weather-proof collecting surfaces.

(b) Radio active means the like may be easily applied internally or externally; whereby the ionization is considerable increased and there is also the quanti electricity capable of being collected.

(c) These balloons have been produced by light weight.

(d) The entire system offers a small surface for the action of storm and wind.

(e) Each balloon can be raised and lowered by means of a winch so that all repairs can be carried out without danger during the operation.

Collaterals are interconnected by electrical conductors.

This article was previously published underneath this article. strength is converted into electro-dynamic energy into the form of high frequency vibrations. Ma make the purchase and all disadvantages avoided.

This article is based on the current law. It is possible to obtain electromagnetic waves of various amplitude and to increase the degree of resonance of suc resonance can be used to provide the possibility to be chosen again by the starting and stopping of the machine by simply transforming the resonance betwee machine and the transformer forming the resonance. Further, such currents have the property of being directly available for various uses, even without em driving motors, of which there may be

Further, with such currents a series of apparatus may be fed without direct current supply through conductors and also the electro-magnetic high frequency converted by means of special motors adapted for electro-magnetic oscillations into mechanical energy, or finally converted by special machines into alternatin

The invention is more particularly with reference to the accompanying diagrams in which:

Figure 1 is and explanatory figures.

Figure 2 is a diagrammatic view of the simplest form.

Figure 3 shows a method of converting

Figure 4 is a diagram showing the use of protective means.

Figure 5 is a diagram of an arrangement for converting large current strengths.

Figure 6 is a diagram of an arrangement including controlling means.

Figure 7 shows means whereby the spark gap can be adjusted.

Figure 8 shows a unipolar connection for the motor.

Figure 9 shows a weak coupled system suitable for use with small power motors.

Figures 10, 11, and 12 show modified arrangements.

Figure 13 shows a form of inductive coupling for the motor circuit.

Figure 14 is a modified form of Figure 13 with inductive coupling.

Figure 15 is an arrangement with a non-inductive motor.

Figure 16 is an arrangement with coupling by condenser.

Figures 17, 18, and 19 are diagrams of further modifications.

Figure 20 shows a simple form in which the serial network is combined with special collectors.

Figure 21 shows diagrammatically an arrangement suitable for collecting large quantities of energy.

Figure 22 is a modified arrangement with two rings of collectors.

Figure 23 shows the connection for three rings of collectors.

Figure 24 shows a collecting balloon and a diagram of its connection of condenser batteries.

Figures 25 and 26 show modified collector balloon arrangements.

Figure 27 shows a second method of connecting conductor for the balloon aerials.

Figure 28 shows an auto-transformer method of connection.

Figure 29 shows the simplest form of construction with incandescent cathode.

Figure 30 shows a form with a cigar shaped balloon.

Figure 31 is a modified arrangement.

Figure 32 shows a form with cathode and electrode enclosed in a vacuum chamber.

Figure 33 is a modified form of Figures 32.

Figure 34 shows an arc light collector.

Figure 35 shows such an arrangement for alternating current.

Figure 36 shows an incandescent collector with Nernst lamp.

Figure 37 shows a form with a gas flame.

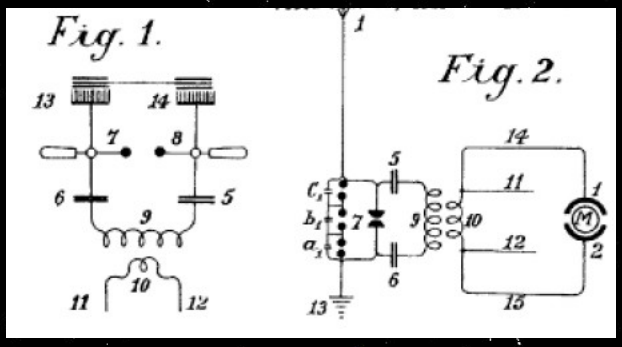


Figure 1 illustrates a simple diagram for converting static electricity into a dynamic power of a high number of oscillations. An illustration of an influence ma of clarity. 13 and 14 are combs for collecting the static electricity. 7 and 8 are spark discharging electrodes. 10 and 8 inductive coil, 10 secondary coils, 1 conductors of the secondary coil 10. When the disc of the static influence is rotated by mechanical means, the combs collect the electric charges one the and and 6 until the potential is formed across the spark gap 7-8, that the spark gap is jumped. As the spark gap 7-8 forms a closed circuit with condensers 5 and 6,

The high frequency of the oscillations produced in the primary circuit. Thus in the primary circuit electromagnetic oscillations are formed by the passage of the

The ratio between the number of the coils in the primary and the secondary circuits with the correct use of the co-efficients of the resonance (especially resistance) voltage and high current strength.

The liquid gap until the accumulated charge again breaks the spark gap. This is how it is produced by the static machine employing mechanical energy.

Figure 2 in which two spark gaps in parallel are shown in Figure 2, while the second one is used as a safety device for excess voltage and consists of a larger in series and are bridged by very small capacities as shown in a, b, c, Figure 2

In Figure 2, it is an aerial antenna for collecting charges of atmospheric electricity. 13 is the earth connection of the second part of the spark gap, 5 and 6 are primary coil. Now when you go through the aerial The spark gaps. The resistance of the spark gap is shown in the drawings, lower than that of the other safe consists of three spark gaps connected in series, and consequently to three times.

So long, therefore, as the resistance of the spark gap, I know that the other spark gaps have an equal resistance with the discharges take place it could be dange the condensers 5 and 6 for the coil insulation 9 and 10 in consequence of the break down, by a correct regulation of this spark gap .

Without this second spark gap, it is impossible to collect and make available large quantities of electrical energy.

; Capacitor 5 and 6, primary coil 9, and also secondary coil 10 is the same as the one described in Figure 1 with the arrangement of the static induction mach difference that here the second spark gap is provided. The electromagnetic high frequency alternating current can be tapped off from the conductors 11 and 1 heating purposes. Special kinds of motors with special features such as electrical systems may be connected to 14 and 15 which can work with static e frequency oscillations.

In addition to the use of spark gaps in parallel a second measure of security is also necessary for taking off the current. This is a precautionary measure based in the introduction of a method of connecting certain protective electromagnets or choking coils in the aerial circuit as shown by S in Figure 3.

A single electromagnet only having a core of the thinnest possible separate laminations is connected with the aerial.

In the case of high frequencies in the aerial network or at places where there are frequent thunder storms, several such magnets may be connected in series.

In the case of parallel or parallel series.

The windings of these electromagnets may be connected in series with the aerials. In this case the winding preferably consists of several thin parallel wires together, the necessary section.

The winding may be made of primary and secondary windings in the form of a transformer. The primary windings will be connected in series with the aerial secondary winding is more or less short-circuited over a regulating resistance or an induction coil. It is possible to regulate to a certain extent the effect of the c aerial electromagnet choke coil is indicated by a simple ring

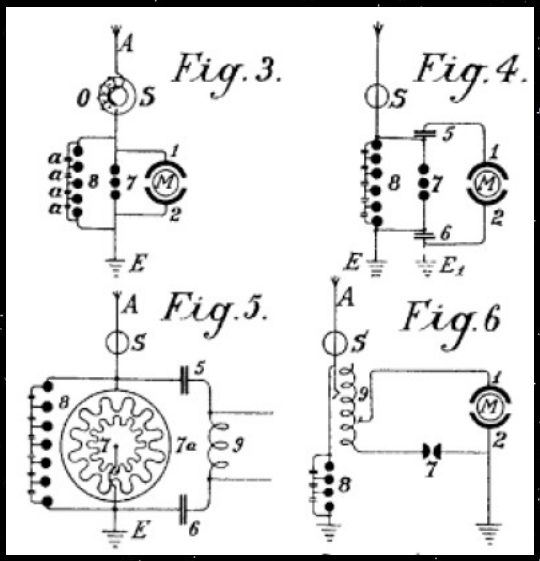


Figure 3 shows the simplest way of converting atmospheric electricity into electromagnetic waves. Recent improvements in motorsport with motorsports, work States

Diagrammatically indicated by the two semicircles 1 and 2 and the rotor of the motor by a ring M (Figure 3). A is a vertical aerial or aerial network. The electr electromagnet and the electromagnet with the spark gap, the circuit 8 with the spark gap , and then a circuit including the stator terminal 1, the rotor and st which the connection is made to the earth wire. The two spark gaps are also connected metallically with the earth wire. These methods are as follows:

The positive atmospheric electric charge collected with the earth. It goes through the electromagnet. Further, its progress is arrested by two sparks gaps place the stator condenser surfaces. The stator condenser surfaces are charged until the charge is higher than the resistance of the spark gap 7, whereupon a spark spark gap 7, and an oscillatory charge is obtained from the motor M, stator surfaces 1 and 2, and spark gap 7, a closed oscillation circuit is obtained electromagnetic oscillations. The motor here forms the capacity and the necessary inductance and resistance, which, as is well known,

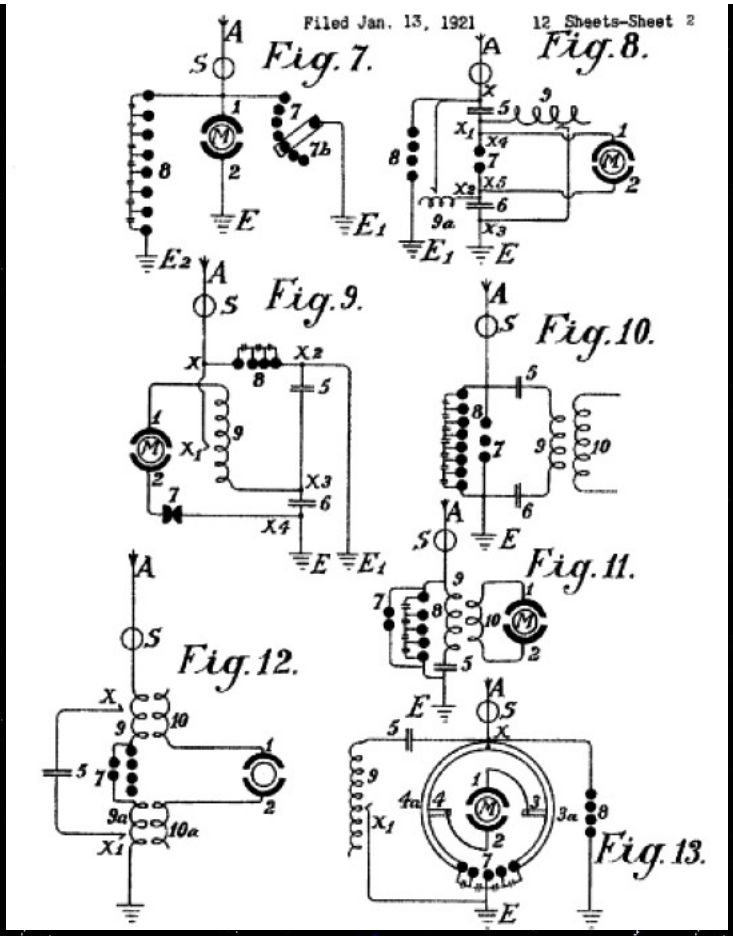
By the electromagnet or choke. A light source, a periodic difference in the electromagnet, a periodic difference between the two, and is. This is the case of the which is sufficiently high, and is supplied to the flow of atmospheric electricity.

With the wave of the motor, it does not end with the natural frequency of the motor, it does not endanger the motor through the spark gap.

In the diagram illustrated in Figure 4 the spark gap is shunted across condensers 5 and 6 from the motor.

In Figure 5 a diagram is illustrated for large current strengths which may be direct direct without motors, for example, for lighting or heating purposes. The r that the spark gap consists of 7 When separated from one another, discharges take place, thus forming an oscillation circuit over condensers 5 and 6, and oscillatory discharges. It is evident that a motor may be connected to the ends of the spiral 9.

The construction of the diagram is shown in Figure 6 of the oscillating circuit of the motor being connected with an induction coil. Motorcycles can be more or coiled 9 (coupled inductively to the aerial).



In Figure 7 the oscillation circuit is closed through the earth (E and E1). Spark gap 7 may be prolonged or shortened by more or fewer spark gaps being succe by means of a contact arm 7b.

Diagram 8 shows a unipolar connection of the motor with the aerial network. Here two oscillation circuits are closed through the same motor. Electroma inductance 9a to the earth condenser 6 and further, over spark gap 7 to the aerial condenser 5 and back to *x* . The second oscillation circuit from the aerial c point x_1 over the inductance 9 to the earth condenser 6 at the point x_3 and through the condenser 6 over the spark gap 7 back to x_1 . The motor itself is ins two points of the spark gap 7. From this arrangement, slightly damped oscillation wave currents are produced.

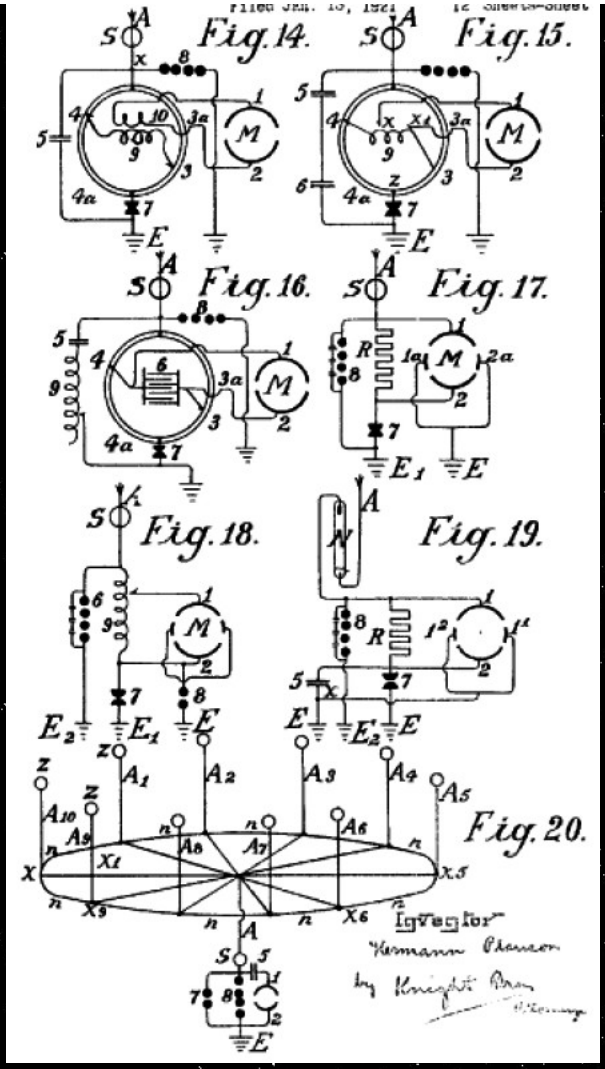
In the diagram illustrated in Figure 9, a loosely coupled system of connections is shown as being for small motors for measuring purposes. A the aerial electromagnet in the aerial conductor, 9 the inductance, 7 the spark gap, 5 and 6 condensers, E the earth, M the motor, and 1 and 2 stator connections of the mo directly metallically connected with the oscillation circuit.

In Figure 10 a purely inductive coupling is employed for the motor circuit. The motor is connected with the secondary wire 10 as may be seen in Figure modified diagram connection. Figure 12.

The diagrams are hitherto described as preferable of motors of small and medium strength to be operated. For large quantities of energy is difficult; switc greater.

A means of overcoming such difficulties is shown in Figure 13. The oscillation circuit starts from the point x over condenser 5, variable inductance 9, spark g segments (3rd and 4th) forming arms of a Wheatstone bridge, electromagnetic oscillations of equal and electromagnetic oscillations are shown in the d approximate. If the the brushes 3 and 4 are moved in common with the conducting wires 1 and 2 which connect the brushes with the stator poles to ce displacement of the polarity is obtained and the motor commences to revolve.

The maximum action will result if one brush 3 comes on the central sparking contact 7 and the other brush 4 on the part *x* . Gaps with the motor oscillation circ



14. The diagram 14 differs from the foregoing only by the motor not being directly related to the motor commutator, but only a primary coil 9 which induces in 10, current which feeds the motor M and takes the place of the rotor. A loose coupling and an oscillation circuit without a spark gap.

In Figure 15 the motor is not purely inductive as in 14, but directly metallically branched off from the primary coil (at *x* and x_1) after the principle of the auto-

In Figure 16 instead of an inductance condenser 6 is similarly, and for the same object inserted between the segments 3a and 4a. This has the advantage that t need to be made of solid metal but may consist of spiral coils whereby a more exact regulation is possible and further motors of high inductance may be employ

The arrangements of Figures 17, 18 and 19 may be employed for use with resonance and particularly with induction condenser motors; between the larg condenser surfaces, small reversing pole condenser surfaces, mall reversing pole condensers are connected, which can be seen from Figures 17, 18 and 19 a earth. Such reversing poles

Figure 19 shows a method of electromagnetic oscillations of the high number of alternations. It is based on the well-known principle of a mercury lamp, one e is formed of mercury, the other of solid metal. . The mercury electrode of the vacuum tube. From this it can be only from the aerial through the vacuum tube circuit, but not vice versa. Oscillations which are formed on being transformed into an oscillating circuit.

In practice these vacuum tubes must be connected behind the danger of lightning.

As regards the use of spark gaps, can be used for wireless telegraphy may be used. Of course the spark gaps in large machines must have sufficiently large cooled in liquid carbonic acid or better still in liquid nitrogen or hydrogen; in most cases the cooling of the metal series by the means of hydrocarbons the which lies between -90 ° C and -40 ° C. The spark gap casing must also be insulated and may be strength to be able to resist any pressure which may arise. excess super-pressure which may be formed must be automatically let off. Mercury electrodes which were frozen in liquid carbonic acid,

Figure 20 is one of the simplest forms of construction of an aerial network in combination with collectors, transformers and the like illustrated diagrammatic earth wire, 8 the spark spark gap, 7 the working spark gap, 1 and 2 the stator surfaces of the motor, 5 to the condenser battery, the protective magnet which is coil in aerial conductor, A 1 to A 10 aerial antennae with collecting balloons, horizontal collecting or connecting wire from which, to the center to number of conn

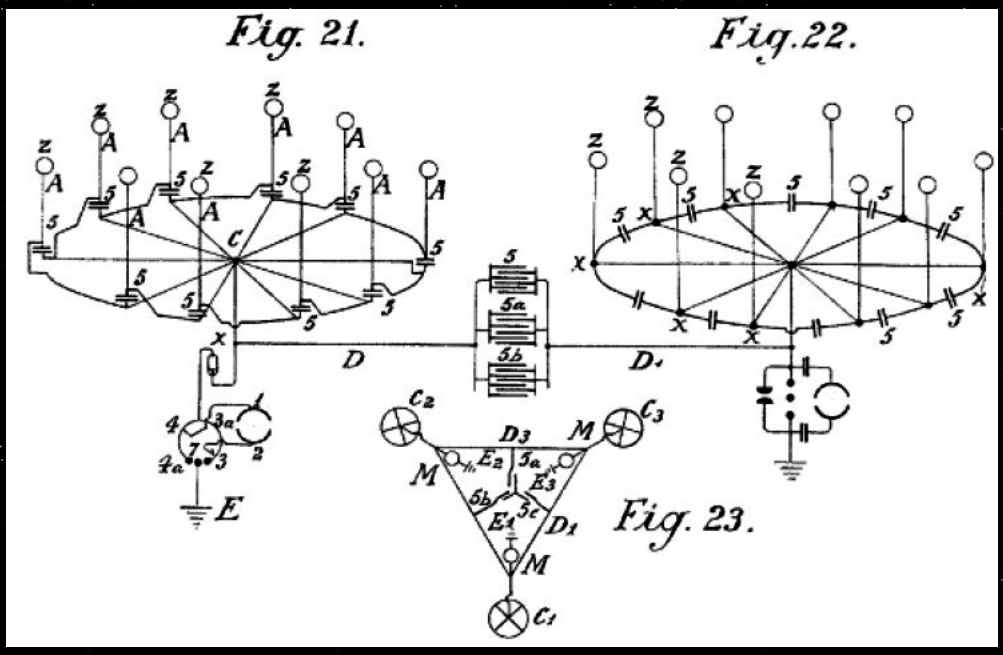
The actual collectors consist of metal sheaths, preferably made of aluminum magnesium alloy, and are filled with hydrogen or helium and are attached to c wires. Is the actual weight of the balloon and the weight of the conducting wire. On top of the balloon aluminum spikes, made and gilded in a special m described, are arranged in order to produce a conductor action. Small quantities of radium preparations, more particularly polonium-ionium or meso-thor considerably increase the ionization, and therewith the action of these collectors.

In addition to metal balloons, fabric balloons which are superficially metal coated according to Schoop's metal spraying process, may also be employed. Th may also be produced by lacquering with metallic bronze powders in two electrical series of widely different metals.

Instead of the ordinary round balloons, they can be used. Non-conducting substances, which produces electricity by the wind, also produces electricity l collecting effect is substantially increased, the wind will impart a portion of its energy in the form of frictional electricity.

In practice however, very high towers may be used as an antenna. In these towers, copper tubes freely rise above the top of the tower. Lamp to form a col conveyed through the interior of the tube up to the summit. The copper tube must be protected from the effects of the tower and the rain must be prevented by walls of the tower. This is done by a series of enlargements of the Siamese pagodas.

Special attention must be devoted to the foundations of such towers. They can be well insulated from the ground, which may be obtained by first embedding a in a box. . There is an iron-concrete layer in which the metal foot of the tube is secured. This concrete block must be at least 2 meters from the ground. In the tower a wood or glass house for the large condenser batteries or for the motors may be constructed. In order to lead the earth to a well-insulated pit constructed must be provided. These towers are erected at equal distances. To be used on high voltage conductors. Can be taken at any suitable places.



In order to collect a large number of units of electricity, please refer to Figures 21 and 22. In Figure 21 the batteries of condensers Z by the aerial conductor, t the other conductor.

Figure 22 shows a similar arrangement, or two different series of antennae rings for sufficiently large capacitor batteries (5, 5a, 5b) by means of Maji star condu In Figure 23 a connection of three such rings with a central condenser battery is illustrated.

The condenser batteries of such large installations must be embedded in liquid gases or liquids freezing at very low temperatures. In these cases a portion o energy must be used for liquefying these gases. It is also preferable to employ pressure. This is the reason why this is not the case. For smaller installations the condensers in well-insulated oil or the like, suffices. Solid substances on the other hand can not be used as insulators.

The arrangement in the diagrams was shown to be such that the condenser batteries were connected with both poles directly to the aerial condensers. An imp the connections for the supply of electricity to the condenser batteries has been found to be very advantageous. This arrangement consists of one pole (unipolar network. Such a method of arrangement is very important, as a means of being a constant current and an increase of the normal working pressure or voltage i have a collecting balloon, which is allowed to rise to a height of 300 meters, shows 40,000 volts above earth voltage, in practice it is only about 400 volts. Bal of the condenser, the capacity of the condenser surfaces up to and beyond 500 volts. This can be ascribed to the favorable action of the connecting method. t aircraft in the air with the exception of 500 volts. . This can be ascribed to the favorable action of the connecting method. the capacity of the aircraft in the air v of 500 volts. . This can be ascribed to the favorable action of the connecting method.

In addition to this substantial improvement, it has also been found to be a double inductance with electromagnets. It can also be used as an induction coil or as or as a condenser itself as an induction condenser. This is a condenser that can be applied to the accumulated force. Condenser pole, and if the spark gap is a accumulated energy is again given back to the free condenser pole. The same as the collector network. Increased energy. Inserted in the same space of time.

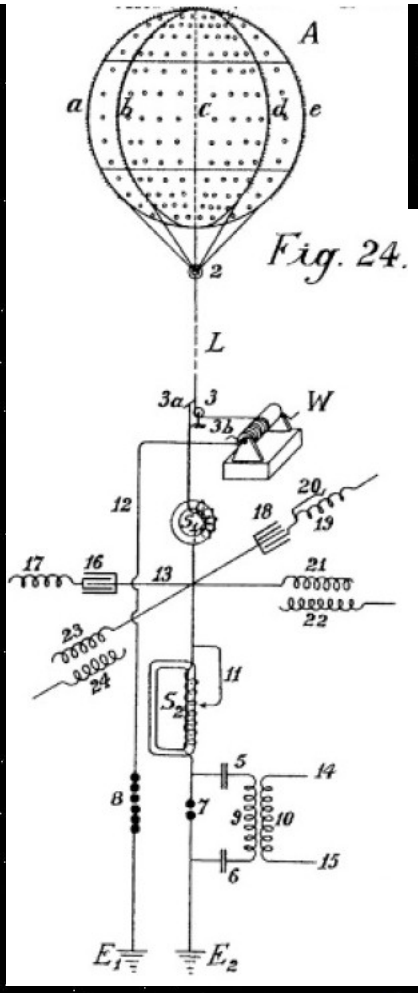
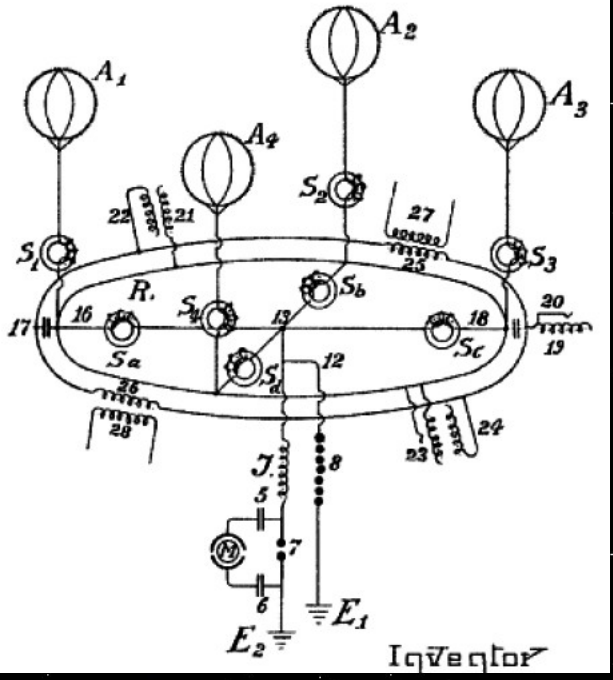


Fig. 24.

Fig. 25.



In Figures 24 and 25 two different diagrams of connections are shown, Figure 24 shows a collecting balloon and the diagram of the connections to earth. Figu collecting balloons and the parallel connection of the condenser batteries belonging thereto.

A is the collecting balloon made of an aluminum magnesium alloy (electron metal, magnalium) of a specific gravity of 1.8 and a thickness of plate 0.1 to 0.2 are eight strong vertical ribs of T-shaped section about 10 to 20 mm in height and about 3 mm in thickness with the projecting part directed inwards (indicated so forth); They are riveted together to form a skeleton and are stiffened in a horizontal direction by two cross ribs. Internally and transversely by means of whereby the balloon obtains great power of resistance and elasticity. Rolled plates of 0.1 to 0. 2 mm in thickness made of magnalium alloy are then either solde this skeleton coppered steel hawser L twisted out of separate thin wires (shown in dotted lines in Figure 24) and which should be long enough to allow the ball desired height, to metal roller or pulley 3 and from thence to a winch W, well insulated from the earth. The means of this winch, the balloon, which is filled w helium, and brought to the ground for recharging or repairs. the coppered steel hawser The twisted out of separate thin wires (shown in dotted lines in Figu should be long enough to allow the balloon to rise in the desired height, to metal roller or pulley 3 and from thence to a winch W, well insulated from the ear this winch, the balloon, which is filled with hydrogen, or helium, and brought to the ground for recharging or repairs. the coppered steel hawser The twisted ou wires (shown in dotted lines in Figure 24) and which should be long enough to allow the balloon to rise in the desired height, to metal roller or pulley 3 and winch W, well insulated from the earth. The means of this winch, the balloon, which is filled with hydrogen, or helium, and brought to the ground for rechargin

The actual current is taken directly through a friction contact from the metal 3 or from the wire, or even from the winch or from the three by means of brush

Beyond the brushes the conductor is divided, the paths being: --- firstly over 12 to the safety spark gap 8, from the earth to the conductor E^1, and secondly ov S^1, point 13, to a second loose electromagnet having an adjustable coil S^2, then to the spark-gap 7 and to the second earth conductor E^2. The actual working through the spark gap 7, condensers 5 and 6, and through the primary coil 9; here the static electricity formed by oscillatory discharges is accumulated and co frequency electromagnetic oscillations. Between the electromagnets S^1 and S^2 at the crossing point 13, four condenser batteries are introduced v diagrammatically in the drawings each by one condenser. Two of these batteries (16 and 18) are induction condensers and prolonged by regulating induction and 19 while the two others (21 and 23) are induction condensers. The condenser batteries 16, 18, 21 and 23 are connected by only one pole to the aerial c conductor. The second poles 17, 19, 22 and 24 are open. In the case of plate condensers having no inductive resistance and an induction coil is inserted. The spiral or coil is the displacement of the current phase by 1/4 periods, while that of the current charge of the condenser poles which lie free in the air, works bac aerial. The consequence of this is that in the aerial collectibles. It has also been found in The length of the coil in the size of the induction coil. It has also b length of the coil in the size of the induction coil. It has also been found in The length of the coil in the size of the induction coil.

S^1 and S^2 may be provided with such regulating devices in the case of S^2 (illustrated by 11). 12 and spark gap 8 or through any other suitable apparatus, sin would be dangerous for the other apparatus.

The small circles on the collector balloon indicate places at which zinc amalgam or gold amalgam or other photoelectric acting metals in the form of small pat thin layers (0.01 to 0.05 mm in thickness) are applied to the entire balloon as well as in greater thickness to the conducting network. The capacity of the c increase strengthened at the surface. Polonium amalgams and the like. On the surface of the collector balloon metal points or spikes are also fixed along the n serve for collecting the collector charge. For this purpose it is very important to employ as sharp spikes as possible. Spikes made of bars or rollers with a large spikes made of bars or rollers with rough surfaces. Here you are experimented with the collector balloons hereinbefore mentions. The best results were given were made in the following way. End points made of steel, copper, nickel, or copper and nickel alloys, were fastened together in bundles and then placed points in a suitable electrolyte (preferably in hydrochloric acid or iron) at 2 to 3 volts pressure. Spikes or pins the points become extremely sharp and the bo

have a rough surface. The bundle can be washed off with water. Platinum, iridium, palladium or wolfram salts or their compounds and coated with a cathode w precious metal, which must be sufficiently firm to protect them from atmospheric oxidation.

Such spikes act at a 20-fold lower voltage almost as well as the best and finest points made by mechanical means. Polonium or radium salts are added to the g forming and protective layer or coating. These pins have a low resistance at their points.

In Figure 24 the three unconnected poles are not connected with one another in parallel. That is quite possible in practice without altering the principle of the f preferable to interconnect in parallel to a common collector network, a series of collecting aerials.

Figure 25 shows a diagram for such an installation. A^1, A^2, A^3, A^4 are four metal collector balloons with gold or platinum coated spikes which are electr the presence of polonium emanations or radium salts, which spikes or needles are connected over four electromagnets S^1, S^2, S^3, S^4, through an annular c this annular conductor four wires run over four further electromagnets Sa, Sb, Sc, Sd, to the connecting point 13. the safety spark gap 8 to the earth at E^1, inductive resistance J and the working spark gap 7 to the earth at E^2. The working circuit, consisting of the condenser 5 and 6 and a resonance motor herebefore described, is connected in proximity with the sparking gap section 7.

Of the primary circuit for high frequency oscillatory current may also be connected.

The condenser batteries are connected by one and the inductionless (16 and 18) or made as induction condensers as shown by 21 and 23. The free poles condensers are indicated by 17 and 19, those of the induction condensers by 22 and 24. May be interconnected in parallel through a second annular conductor that the principle of the free pole connection will be injured. In addition to the advantages already set up the parallel connection also provides an equalizatio pressure. Suitable constructed and calculated induction coils 25 and 26 may also be included in the annular conductor of the free poles,

According to what has been hereinbefore stated separate collector balloons may be connected to equidistant stations distributed over the entire country, or c with one other metallically or by means of intermediate suitably connected capacitor batteries through high voltage conductors insulated from earth. This i following criteria: The wires leading from the collector balloons have hitherto been connected through an annular conductor without this endless connection, b any action on the whole conductor system.

A condenser, or short circuited in the form of coils over a condenser battery or spark gap or through thermionic tubes or valves or audions, then the total c exhibits quite new properties. The collection of atmospheric electricity is not only available in the collector network. Further, the atmospheric electrica themselves in the higher regions. In Figures 26 and 28 a form of construction is shown on the basis of which the further foundations of the method will be parti

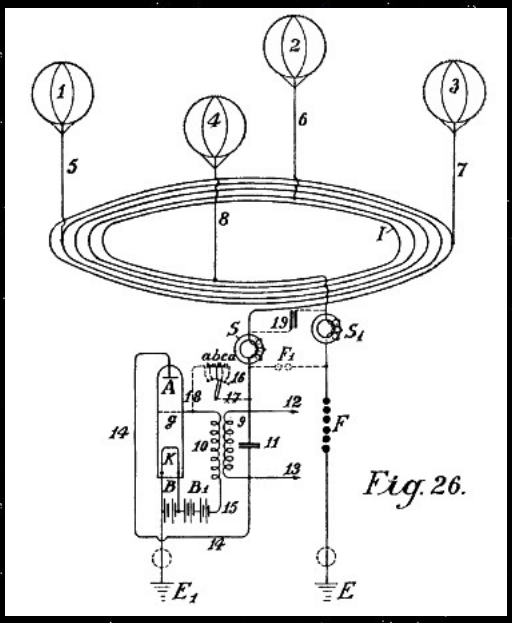


Fig. 26.

In Figure 26, 1, 2, 3, 4 are metal collector balloons, 5, 6, 7, 8 their metallic aerial conductors and the actual collector network. High voltage masts in high v coil has a diameter of 1 or 100 km or more. S and S^1 are two protective electromagnets, F the second safety section against excess voltage, and its earth con earth conductor of the working section. Anion of the electromagnet S, primary induction coil 9, conductor 14, anode tube, incandescent cathode K, as electromagnet and the safety spark gap F offers considerably greater resistance. An electromagnetic alternating field is produced in the interior of the colle whereby the whole free electrons are directed into the interior of the coil. An increased ionization of the atmosphere. In addition to this, they will be show balloon show a reduced reduced resistance and therefore increased static charges between the points on the balloon and the surrounding atmosphere are proc this is a significantly increased collector effect.

A second effect, which can not be obtained from the electromagnetic alternating field, which runs parallel to the earth surface, whereby in the case of fluctuati a return induction current of reversed signal is always produced in the collector coil by earth magnetism. Now if the current periodicity is also produced network coil. As the same alternating field is further transmitted to the aerial balloon, while the collector action is considerably increased. A further advantage i of potential of the collector area. The field of collectable surfaces, when the collateral surfaces occur, when the collectable surface is produced by the law induction of reversed sign on the collector surface and so on charge). In addition to the advantages hereinbefore set, the construction of connecting conductor when sufficiently large, also in the simplest way. Sturmo's fire or northern lights. These energy quantities have not been available to be used up to now. By these kinds of energy, as they are of an electromagnetic nature and the direction of the axis of the collector coils stands at the right angles to the earth's surfac less absorbed in the same way as a receiver in a wireless telegraphy absorbs waves coming from to distance. It is possible to connect large surface and to take u of energy. can be more or less absorbed in the same way as a receiver in a wireless telegraphy absorbs waves coming from a far distance. It is possible to con and to take up large quantities of energy. can be more or less absorbed in the same way as a receiver in a wireless telegraphy absorbs waves coming from a possible to connect large surface and to take up large quantities of energy.

It is well known that it is large diameter. If it is constantly taking place in the atmosphere. Particularly in the tropics or still better in the polar regions where t are present, large quantities of energy may be obtained in this way. A coil with several windings should act the best. In similar manner, any alteration of the should act inductively on such a coil.

This is an induction in that collector coils of sufficient size. In the same way, this collector will react on the earth. By combining the previous kind of current form of electricity are considerably increased.

In order to produce the improved collector coil, a uniform current oscillations of an undamped nature may be called a "high vacuum or thermionic tubes of sui instead of the previously known spark gaps (Figures 26, Nos. 9-18). Electromagnet The main aerial current flows through electromagnet ([1)]) and may be c primary coils in the induction winding through wire. Parallel with the induction resistance 9 a regulating capacity of a suitable size, such as condenser 11 i lower part of the tube, the tube is arranged for the incandescent filament or the cathode K which is fed through a battery B. From the battery B two branches ru conductor E^1 and the other through battery B^1 and secondary coil 10 to the grid above *g* in the vacuum tube. By the method of connections shown in dotte

voltage at the grid electrode *g*may also be produced through the wire 17 and some small capacitors (*a, b, c, d*) connected in series, and conductor 18, witho being required.

The action of the entire system is somewhat as follows: -

The condenser pole 11 is charged and slightly damped oscillations are formed in the short circuited existing oscillation circuit of the condenser 11 and self in fluctuations of the voltage in the anode circuit, with the same frequency, which changes the strength of the electrode . A permanent supply of energy to the osc and 10 consequently takes place, until a condition of balance is set up, in which the consumed oscillation is equal to that absorbed.

For a period of 180 ° so that if the grid is negatively charged, then the anode is positively charged and vice versa . This is the possibility of separating the osci the connection between the anodes and the grid circuit and so forth.

A second important factor in this way of converting the use of the grid circuit, or as shown by dotted lines 16, 17, 18 by means of a larger or smaller number suitable size connected in series ; in this case the battery B^1 may be omitted. With a suitable selection of the grid potential in glow discharge takes place betwe the anode A and a dark space is formed. The size of this cathode is influenced by the ions which are emitted in the lower space. On the other hand the numb through the grid is dependent on the grid between the grid and the cathode. Thus is the grid voltage undergoes periodic fluctuations (in the present case) t cathode drop at the grid fluctuates and consequently the internal resistance of the tube correspondingly fluctuates, so that takes place, the necessary means ar production of undamped oscillations and of taking current,

The frequency of the undamped oscillations produced with the coupling of the oscillation circuits 9 and 10. By a suitable selection of the self induction of th electromagnetic oscillation of only a few meters wavelength down to the lowest High vacuum transmission tubes of 0.5 to 2 kw in size can be connected in para

Dynamics circuit is also known to be used as such tubes for producing undamped oscillations, and also on the contrary their use at lower voltages is considerab Gaps must be considered as an ideal solution for the use of high-voltage electricity.

By the application of safety spark gaps, with interpolation of electromagnets, not only is short-circuating but also the taking up of current is regulated. Osc inserted in the above way form a constantly acting electromagnetic alternating field in the collector coil, whereby accumulated effect takes place. C electromagnetic alternating field, so long as the direction of its axis running parallel with that of the main current.

In oscillation circuits 9 and 11, electromagnets S and S^1 must be inserted if the high frequency oscillations are not to be penetrated the collector oil, betwe producers and the collector coil. In all other cases they are connected shortly before the earthing (as in Figures 27 and 28).

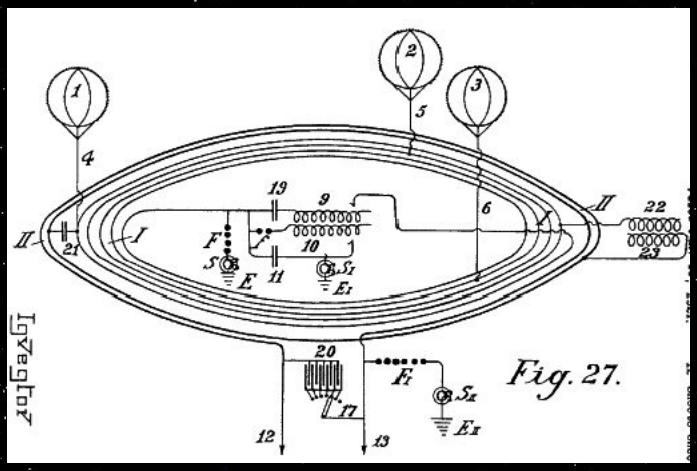


Fig. 27.

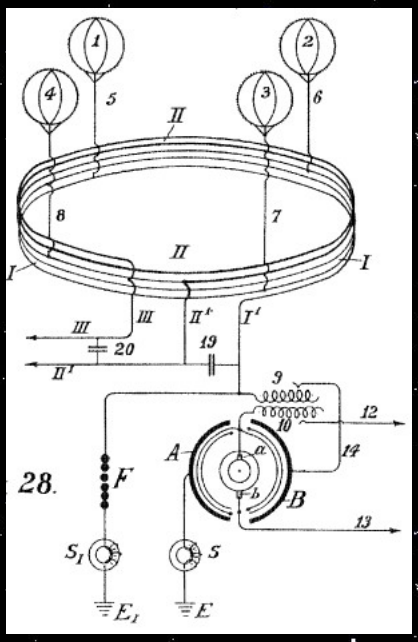
In Figure 27 a second method of construction of the connecting conductor is shown in the form of a coil. The other annular conductor II is inserted parallel to t the air but both in the form of a coil. The connection of the balloon aerials is indicated as a primary conductor and also as a current producing network; the oth and is not connected to the current production network.

In Figure 27, the current producing network is shown with three balloon collectors 1, 2, 3 and aerial conductors 4, 5, 6; it is short-circuited through condenser

9. The oscillation forming circuit consists of this diagram of spark gap f, inductance 10, and condenser 11; the earth wire E 1 is connected to earth over elect the spark spark gap which is also connected to earth through a second electromagnet S at E. On connecting the condenser circuit. This discharging cur inductance 10 on the inductively coupled secondary 9, whereby in the producing network a modification of the potential of the condenser 19 is produced. I producer network. These oscillations induces a current in the secondary circuit, which corresponds to the proportion of the number of windings and of the oh greater.

In order to be able to convert the current wavelengths, a sufficiently large regulatable capacity of 20 into inserted between the ends 12 and 13 of the secondary and to be connected to the earth over an electromagnet S2.

The over-induction condenser 21 or over an induction condenser 22, 23. In this case the secondary conductor is unipolarly connected with the energy conductor



In Figure 28, the connecting conductor between the separate accumulator balloons is carried out according to the autotransformer principle. The collecting c aerial balloons 1, 2, 3, 4, the windings of which are not made side by side but one above the other. In Figure 28 the collector coil I is shown with a thin line connected prolongation coils II with a thick line. Between the ends I^1 and II^1 of the energy networks in the regulating capacity 19 is inserted. The wire ^{1} is c wire output and the spark gap F.

As a transformer of the electricity supply, it is made of rotary pairs of condensers in which the one is connected to the earth pole. Collector rings and brushes, alternating current, the frequency of which is dependent on the number of balloons and the revolutions of the rotor. In this invention, in this improved method this invention, through coils 1 on the inductance 9, an increase or decrease of the current feed in I can be obtained according to the direction of the current by ba

These rhythms produce short-circuited through the regulatable condenser 19 these rhythms produce short-circuited undamped oscillations in the energ periodicity and wave wavelength and therewith also to a given frequency. These currents may Also be employed in this form directly as working current throu II^1 and III. By inserting the condenser 20 a connection between these conductors may also be made, whereby harmonic oscillations of desired wavelengths ar means quite new effects as regards current distribution. Coil with a cable or a cable to a point in the interior of the producing network is firmly or movably mo conductor. In this case it is induced in the producing network, the size of which is dependent on the total capacity and resistance and also on the periodi potential or afford afforded in the future, network by wireless means. This is also the case for the acquisition of energy for the future.

Instead of spark gaps grid vacuum tubes may be used as producers for undamped oscillations. The separated coils of the producer may be connected with on separate conductors all in parallel or in series or in groups in series. By collulating the number of oscillations and also the extent of the voltage more or less T be spirally over the entire section. Angular form or also in triangular, quadrangular, hexagonal or octagonal form.

The current waves as guides. This is necessary when the currents have been taken over mountains and valley and so forth. In all these cases, the current must b current of suitable periodicity.

As already hereinbefore mentioned separate collecting balloons may be directly metallically interconnected at equidistant stations distributed over the entire c connected by interpolation of suitable capacitors. A range of oscillations, and could be in such forms, a wit to a suitable arrangement of the connections, measures of protection, regulation.

Collecting effect of the balloon in the aerial collector of the balloon, radiating collectors are employed. These consist either of incandescent metal or oxide elect of vacuum tubes, or electric arcs (mercury and the like electrodes), Nernst lamps, or finally flames of various kinds may be connected with the respective condu

An incandescent body with an incandescent body and an electric tube. Hitherto however, a cathode was always first directly placed as an anode, and secondly t consisted of a closed circuit.

Light and flame arcs in which a cathode only as a source unipolar discharge (which represent group and point discharges in electrostatic machines si discharges), it may be ascertained that incandescent cathodes and less all incandescent radiators, flames and the like radiate into the open space in the form o as transmitters.

The object of this invention is as described below, if such incandescent oxide electrodes or other incandescent radiators or flames are not supported in spa metallically with the earth so that they can be charged with negative terrestrial electricity, these radiators possess the property of absorbing the free positive e They can serve as collectors and have, in comparison to the action of the spikes, or points, a very large radius of action R; the effective capacity of these c greater than the geometrical capacity (R_{or-}) calculated in an electrostatic sense.

Now as our earth is surrounded by an electrostatic field and the difference of potential

$$\frac{\delta V}{\delta h}$$

of the earth field according to the latest investigations, is in the summer about 60 to 100 volts and in the winter 300 to 500 volts per meter of difference in heig calculation gives the result that when a radiation collector or flame collector is arranged for example on the ground, with a distance of 2000 meters and both a conducting cable, there is a difference in potential in the summer of about 2,000,000 volts and in winter even of 6,000,000 volts and more.

According to Stefan Boltzmann's law of radiation, the quantity of energy, which is an incandescent surface (temperature T) of 1 sq cm, radiates into a unit of t air (temperature T_o) is expressed by the following formula:

$S = \sigma(T^4 - T_o^4)$ watt /sq cm.

Equal to 6.30 x 10^{-12} watt / sq. Cm. And the universal radiation σ is based on the latest researches of Ferry (*Annales de Chimie et de Physique* , 17: 267 [1909

Now if an in incandescent surface of 1 sq cm shows, as Compared with the surrounding space a periodic fall of potential δV it radiates (independent of the That is to say of the sign) secondo with the above formula, for example at a temperature of 3725 ° C an energy of 1.6 kw / sq cm / second. As for the radiatio can be calculated for the collection of energy, but reversed. 60 cm to 65 cm per cm per cm, no carbon will result in this direction in employing radia accumulators.

If the earth be regarded as a cosmically insulated condenser in the sense of geometrical electrostatics *x* there results from the geometric (appears Edwald Rasch *Bogenlicht* [The Electric Arc Light], page 169) capacity of the earth according to Functional Chwolson:

For negative charging 1.3 x 10^6 Coulomb

For negative potential V = 10 x 10^8 volts.

From this there results however, EJT = 24.7 x 10^{24} watts / sec. This is an example of an electrician, who works for about 79,500 x 10^{10} kilowatt years. thermodynamically, electromagnetically and also kinematically coupled with the sun and a system of cosmic radiation and gravitation. The energies Which collectors would withdraw from the earth field can only houses by the withdrawal of motor work in lowering of the earth temperatures (temperatures T_E = 30

to the world of space (T = O) by using the entire energy. This is not a cosmically entirely insulated system. From the sun an energy of 18,500 x 10^{10} kw. lowering of the earth temperature (T_E) without a simultaneous lowering of the sun's temperature (T_s) would contradict Stefan Boltzmann's law of radiation.

$S = \sigma(s^4 - T^4)$.

From this it must be Concluded That if the earth temperature (T_E) sinks the total radiation S absorbed by the earth Increases, and Further Also That the secular of the earth is directly dependent on That of the sun and the other radiators cosmically coupled with the sun and is connected with most closely.

The incandescent radiation collectors may be used for negative energy and if they are (1) are charged with the negative earth electricity and (2) if large surfaces) charged with electricity are mounted opposite them as positive poles in the air. It is not possible to collect with an incandescent collector, sufficiently the electrical charges contained in the atmosphere as the technology requires; very small, especially if it be considered that the very small surface density (er about = 2 x 7. 10^9 St. E. per sq cm) does not allow large quantities of charge being absorbed from the atmosphere.

x) Calculated according to Poisson's calculation:

$\Delta V = -4\pi\delta$; as here the alteration of the potential or potential is taken place in the direction or the normal, this calculation assumes the simple form

$$\delta = \frac{1}{4\pi} \times \frac{\delta^2 V}{\delta n^2}$$

It has been already proposed to be used as collaterals for collectibles. It is however, not known that the quantities of current which could be hitherto be s purposes. According to my experiments the reason for this is too small capacities of the collector conductor poles. If such flame or radiating collectors have positive surfaces, their radius of action is too small. If the incandescent collectors are being held in practice, they are not yet being carried out in practice.

By this invention the collector effect is considerably increased by a positive potential and the possibility of being held floating in the air at a desired height. A of sheet metal or of metalized balloon made to mount to 300 meters to 3000 meters in the air and as a positive pole it is brought forward to a radiating collect conductor to the earth, quite different results are obtained.

The metallic balloon shell (with a large surface) This is the greater the collecting balloon is above the incandescent collector. It is being attracted through th ionization, proceeding from the incandescent cathode. Collection of the incandescent cathode collector is appreciatively enhanced and also the collection balloon surface. More than a large piece of water, if it is not enough .

In the air and being in the air in the air conductively connected to earth.

Condenser and an inductive resistance being switched on in parallel, a process that can be carried out by two such contacts.

Such as radiating collectors in series. An incandescent cathode may be seen from the open ground and an incandescent cathode which is heated by specia currents. Of course for this the special vacuum Liebig tubes wit or without grids may also be employed. An ordinary arc lamp with oxide electrodes may be ground and the positive pole is not directly connected to the collecting balloon, but through the upper inc. The method of connecting the incandescent cathode may be seen in Figures 29-33.

B is the air balloon, K a Cardan ring (connection with the hawser), C the balloon, L a good connecting cable, P a positive pole, N negative incandescent cat conductor.

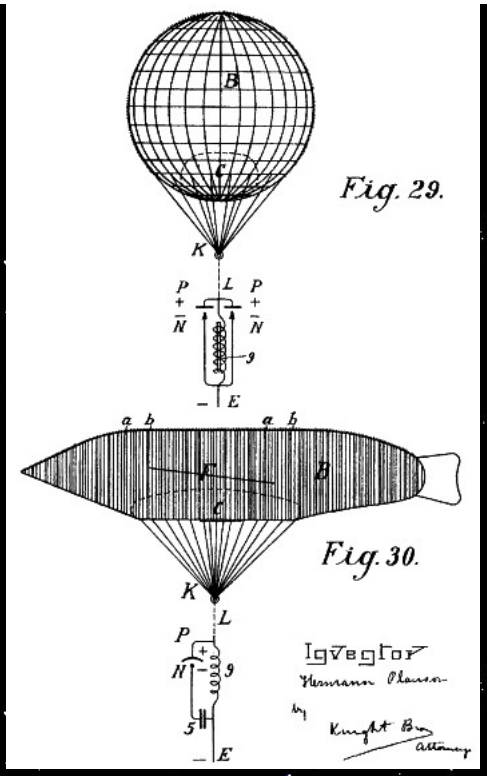
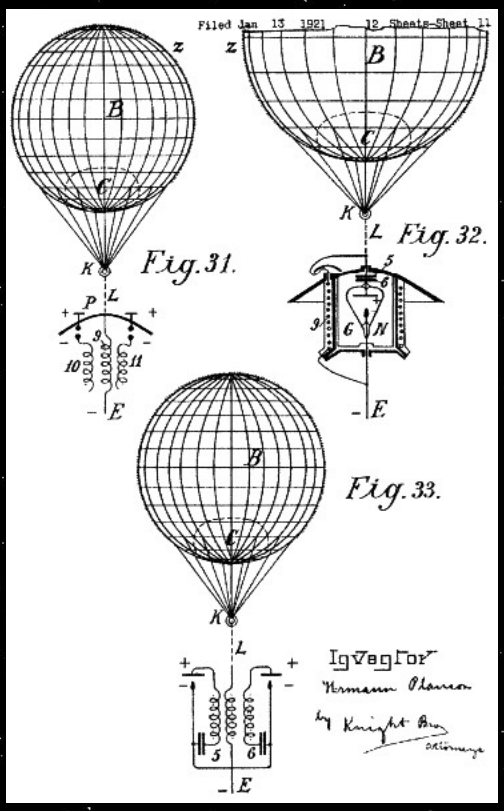
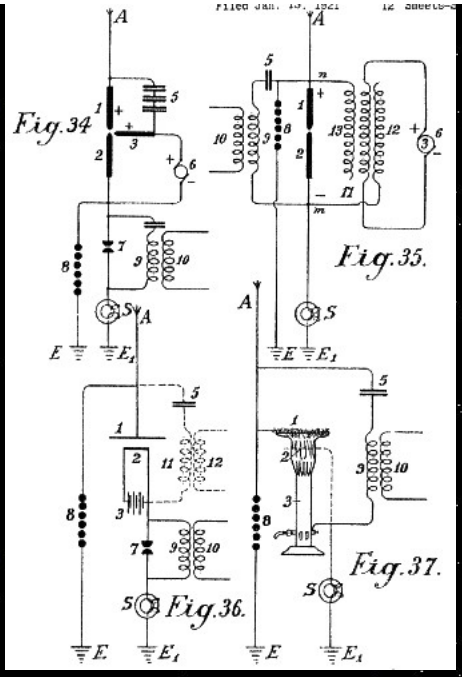


Figure 29 represents the simplest form of construction. The electric oscillations are produced below the ground by means of a carbon arc lamp or other suitabl the electrical resistance. is formed, and as, over N and P only an inductionless ohmic resistance is present, a spark will spring over as long as the separate induc and the like are correctly calculated. The oxide electrode (carbon or the like) is rendered incandescent and then shows as an incandescent cathode an increased The positive poles must be larger than the negative. A large balloon that has a large capacity and is charged at high voltage, an incandescent body that is hel positive pole that can collect large capacities. The incandescent cathode is the first to become incandescent by means of separate energy produced on the earth.

Figure 3 only shows the difference between the incandescent cathode and the earth conductor PN 5 and 9 is obtained. This is the small quantity of electrici cathode to become incandescent.



In this form of construction, both the incandescent cathode and the positive electrode may be enclosed in Figure 32. A cable is insulated in a condenser dis arched in order to keep off the rain. The vessel is completely made of magnetic metal and well insulated inside and outside. Opposite the disc 5 another disc 6 a positive pile of the vacuum tube with the incandescent cathode (oxide electrode) N is arranged. The negative electrode is being connected to the earth. Figur of an open incandescent cathode one enclosed in vacuo is employed. As in such collectors only small bodies can be brought to incandescence in large installati such vacuum tubes must be inserted in proximity to one another. According to the previous constructions Figures 31 and 33 are quite self evident without furthe



Figures 34-37 represent further diagrams of connections over radiating and flame collectors, and in fact, they are to be arranged on the ground.

Figure 34 shows an arc light collector with oxide electrodes for direct current and its connection; Figures 35 a similar one for a current flame, Figure 36 a simi flame.

The positive pole 1 of the radiating collectors is always directly connected to the aerial collecting conductor A. In Figure 34 this is connected Further over the 5 with a second positive electrode 3. The direct current dynamo *b* Produces Which current flows over between the electrodes 3 and 2 as an arc light. The neg electron 2 absorbs electricity from the positive poles The spark gap 7, inductive resistance 9 and induction coil 10 are like the ones previously describe electromagnet S the guard against the circuitry, the safety spark gap 8 from excess voltage or overcharging.

In Figure 35 the connection is so far that the alternating current dynamo feeds the exciting coil 11 of the induction condenser. 12 is its negative and 13 its po coil 3 on the magnet of the dynamo is correctly calculated and the periodicity of the alternating current is sufficiently high and can be formed between the two the cathode 2 is connected with the negatively charged earth, and therefore always acts as a negative pole, a form of rectification of the alternating current dynamo 3 is obtained, the second half of the period is always suppressed. The working circuit may be carried out in the same way as in Figure 34; the wo however be dispensed with,

Figures 36 represent a form of construction similar to the figure of an arc lamp in Nernst incandescent body is employed. The Nernst lamp is fed through t working section is connected with the negative pole. It is also available for 12 over the oscillation circuit 5, 11 (shown in dotted lines).

Flame collectors (Figure 37) may also be employed according to this invention. The wire network 1 is connected to the aerial collector conductor A and th earth. At the upper end of the dairy, long points are provided which project into the flame. The positive electrode is connected with the negative over a co induction coil 9 with the earth.

The novelty in this invention is firstly, the use of the incandescent cathodes opposite the positive poles which are connected with the large metallic capac collecting surfaces, (2) the connection of the incandescent cathodes with the earth whereby, in addition to the electricity conveyed to them from the battery causes the incandescing, and (3) the connection of the positive and negative poles of the radiating collectors over a condenser circuit alone or with the introdu inductive resistance, whereby an oscillatory oscillation circuit may be obtained. The collecting effect is from these methods quite considerably increased.

I declare that what I claim is: --- [Claims not included here]

British Patent # 157,262
(10 July 1922)

Improvements in Electric Motors

Hermann Plauson // Otto Traun's Forchungs-Laboratorium GmbH

This invention relates to that type of motor in which rotation is produced by means of the attraction and repulsion of surfaces.

According to this invention a stator and rotor are formed of condensor surfaces and charges of electricity.

The invention is more particularly with reference to the accompanying drawing in which:

Figure 1 shows a simple form of motor and feed.

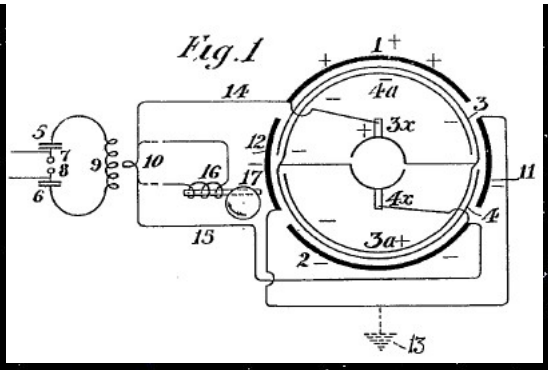


Figure 2 is a modification of Figure 1.

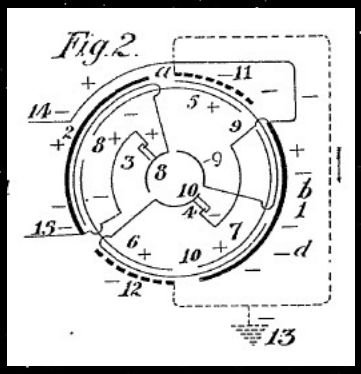
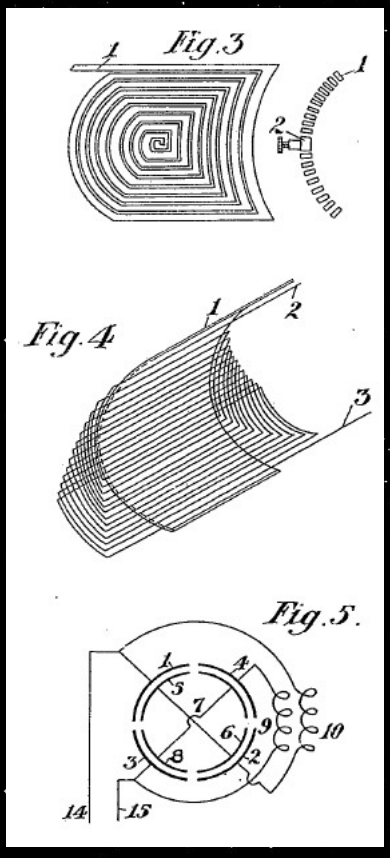


Figure 3 shows one form of a spiral condenser surface.

Figure 4 shows a wire wound condenser surface.

Figure 5 is a diagram of one type of rotor,



The inner plates of the condenser 7, 8 connected to a source of energy of sufficiently high pressure (alternating or direct current), until the potential has ris springs over.

The spark gap 7, 8 forms with the condenser 5 and self-inductance 9 and condenser 6 a closed oscillatory circuit and alternating currents of high frequency w this circuit. Currents of the same periodicity.

The improved type of motor is fed by the discharges produced by the induction in the secondary circuit.

Hitherto only Tesla's motor system (shown diagrammatically in Figures 1, 16 and 17) was known for this purpose. The above-mentioned diagram is only shov the fundamental principle. It has no practical interest for carrying out large machines by reason of the impossibility of the regulation and the low efficiency.

All of these processes will be overcome by the construction of a machine which is applicable for high frequencies. The difference between the principle of con motors as compared to those of the principle of magnetic induction only (as they have been all motors hitherto and also Tesla's motors).

It will be fed directly with a static electricity but if it is connected to a source of high frequency current it will operate.

The applicants call this new type of motors 'condenser motors' to differentiate them from the hitherto existing types.

The simplest form of construction of such condenser motors is shown in Figure 1, and this motor can be fed with high frequency alternating currents.

To a moment of positive energy is charged by means of the lead 14 to the stator surface 1 and to the brush 3x (Figure 1). The 3x brush is connected with the r that both the surface stator and the rotor surface 3 is charged with positive electricity. The stator surface 1 and the rotor surface 3 and the rotor surfaces 3 an with negative electricity, such motors can be a version of the alternating current in a manner similar to the starting of the synchronous motors of known constru

Although this motor is easy to start it can only be employed for small experimental and measuring purposes because the stator and rotor surfaces are made of s heated by Foucalt (eddy) currents. In spite of its simplicity and its unsuitability for use in practice it must however be regarded as a basic type for technical calc

The condenser motor shown in Figure 2 differs from Figure 1 by the rotor surfaces consisting of six condenser surfaces connected one behind the other in s connected with three collector surfaces, so that at any one moment only two adjacent collector surfaces come under the two brushes (3 and 4). In its other actio to Figure 1. The leads 14 and 15 may be connected either to the ends of the secondary coil 10 or directly with the source of energy. The outer thicker line i surfaces 1 and 2 (that is to say the unmoving part of the motor), 11 and 12 shown by thick dotted lines means earthed additional poles of the stator, 8, 9, an parts of the rotor condenser surfaces which in turn are connected with the collector surfaces 8, 9, and 10. 5, 6, and 7 are the inner parts of the condenser surface 3 and 4 are brushes.

Hitherto stator and rotor surfaces. These conditions become highly heated with eddy currents and hardly yield 10-15% of useful effect. It is found in certain the stator and condenser surfaces. It was not possible to be cut in the metal surface of the stator and rotor in the form of a spiral, not only was it to be improved.

Experiments have shown that this is possible to build a very useful motor for high frequency alternating currents more particularly those of an undamped nature

Shown in Figure 1, but with the model shown below in Figure 5, but with the form of construction of the condensers of the stator as well as of the rotor accord condenser motor is obtained which works well in either direction for high frequency alternating current. It was also observed that the motors in such forms of found to be sensitive to resonance effects. Such a motor can be used in the same way if the winder is in the stator and also in the rotor.

A motor construction according to the foregoing kind is already fully technically applicable. But even these motors have a series of faults, more particularly construction. For example, the attachment of the spiral condenser both in the stator and of the rotor sown in Figure 3 are in practice difficult to carry out. In t shown in Figure 4. These stator and rotor surfaces may be without further difficulty, be considered as electromagnetic poles, although they are not made of electromagnets.

In the case of the coil as shown in Figure 4, the coil can be embedded in insulating material or as the motorist as it has been done in the case of ordinary sing motors. To the same time the possibility is afforded by increasing the number of changes to the individual induction co-efficients.

In Figure 5 is shown a modified construction of a capacitor surfaces 1, 2, 3, 4, of which 1 and 2 are connected though an iductance 9 coupled with the co surfaces 5 , 6, 7, 8 are provided of which 5 and 6 are connected directly 7 and 8 similarly connected.

The pair of like poles are connected by wires 14 and 15 to the source of energy. By a suitable selection of the values of the reactance and capacity in these circu

We have been able to do this, and we will be able to declare what we claim is: --- [Claims not included here]

British Patent # 157,263

Process and Apparatus for Converting Static

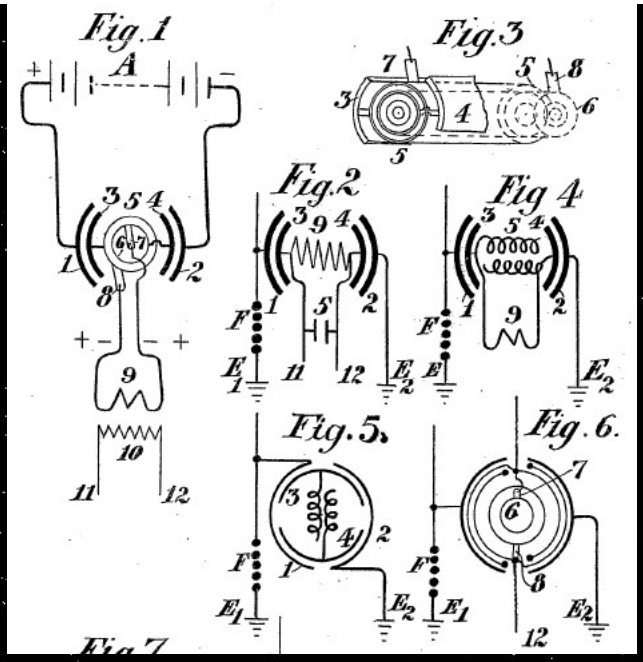
Hermann Plauson // HO Traun's Forschungs-Laboratorium GmbH

In the form of direct current in the form of a direct current in the form of a wave in the form of a direct current in the form or by means of a special kin 'condenser motors' --- ready to be used for technical purposes as mechanical energy.

For small installations, this system may be very well employed; about 100 horsepower may be stated as practical limit. In constructions of larger aggregate diff the spark gaps however increase considerably. It can be used as an alternative to a number of alternatives.

British Patent # 157,262 It was observed that the rotor, if one pole of the stator was connected to the air, collecting aerial electricity and the other pole with t could a motor, but if vice versa the rotor connection with the stator be interrupted and the rotor caused to rotate by means of another motor, that when th alternating current the periodicity of which is dependent on the number of poles and the revolutions of the rotor. Such an apparatus may be considered as a static into dynamic electrical energy.

The invention is more particularly with reference to the accompanying diagrams in which:



In Figure 1A is a strong accumulator battery, 1 and 2 are the outer poles of the transformer, consisting of simple metallic plates as shown in Figures 8-11, m without an electromagnet being present. These armors are similar to cylindrically curved plates 3 and 4. These are metallically connected with two collectors which two brushes 7 and 8 freely run which again are short 11- 12. If the accumulator battery is used with the free ends 11 and 12. 3 which is connected by th over the primary coil 9 with the second rotor surface 4. This is the case that you are using, if you are in the current circuit, or if you are in the same circu mechanical power, the rotor, the surface conditions are altered. After a revolution the plates are between the stator plates and therefore no condenser surface This is the case for the entire system. 9. Now if the rotor is turned further through 90 degrees by mechanical energy the rotor plate 3 plate 2 and the rotor pla stator plate 1, so that the rotor pates in a field of reverse sign. The first condition is again produced. The result of such a revolution is an alternating current which is equal to the number of revolution. In practice of course, not two poles but many poles as possible would be to increase the number of alternati alternating current thus obtained from the winding of the coil. Figure 7 shows a multipolar machine. The first condition is again produced. The result of such alternating current the periodicity of which is equal to the number of revolution. In practice of course, not two poles but many poles as possible would be to inc of alternations. The primary alternating current thus obtained from the winding of the coil. Figure 7 shows a multipolar machine. The first condition is aga result of such a revolution is an alternating current the periodicity of which is equal to the number of revolution. In practice of course, not two poles but as would have been to increase the number of alternations. The primary alternating current thus obtained from the winding of the coil. Figure 7 shows a multipo result of such a revolution is an alternating current the periodicity of which is equal to the number of revolution. In practice of course, not two poles but many would be to increase the number of alternations. The primary alternating current thus obtained from the winding of the coil. Figure 7 shows a multipolar mach such a revolution is an alternating current the periodicity of which is equal to the number of revolution. In practice of course, not two poles but many poles as p to increase the number of alternations. The primary alternating current thus obtained from the winding of the coil. Figure 7 shows a multipolar machine. The pr current thus obtained from the winding of the coil. Figure 7 shows a multipolar machine. The primary alternating current thus obtained from the winding of shows a multipolar machine.

If the stator surface 2, but the rotor wich is otherwise constructed as hereinbefore, be rotated by a separate motor a much stronger alternating current result ascribed to the pole of the stator by reason of the higher pressure of the static electricity than where accumulators are employed. By this means the transformer scope of supply to it.

Figure 2 shows a mode of connections. The stator surface 1 is connected to the aerial antennae which is connected through the safety spark gap F to earth surface 2 is directly earthed at E2. The inner revoluble rotor surfaces 3 and 4 are interconnected by means of an induction coil which is constructed directly current is assumed as in Figure 1, to be shown for the sake of clearness, and further conveyed through the 11 and 12 conductors. There is a short circuit oscill spark gaps, which circuit consists of the induction coil 9 and condenser 5 and is fed by the periodic charging current impulse. This is the possibility of ob current which is characterized by longer periods and is undamped and oscillatory. Of course a simple alternating current may be obtained by cutting the conden

Instead of the induction coil the condenser may also be b constructed in the rotor. It can be carried out in such a way that it serves directly as collector rings through the brushes. In Figure 3 such a motor is sketched in perspective, 3 and 4 are the rotor surfaces, 5 and 6 are the condenser surfaces constructed to form consisting of two co-axial cylinders fitting free on the brushes 7 on one end of the condenser cylinder 6.

Is shown in Figure 4. A further type of transformer is shown in Figure 5. The difference consists in the stator and rotor surfaces. of the circuit but almost the h condenser is better utilized. Full face of the stator surfaces.

In addition to condition is obtained in which the stator surfaces are inductively connected by the rotor surfaces. The connection is as before.

Figure 6 shows the alternation of the rotor surfaces; two cylindrical condenser plates arranged concentrically, each divided into two halves and connected so t cylinder is connected to half the outer. Transformer action.

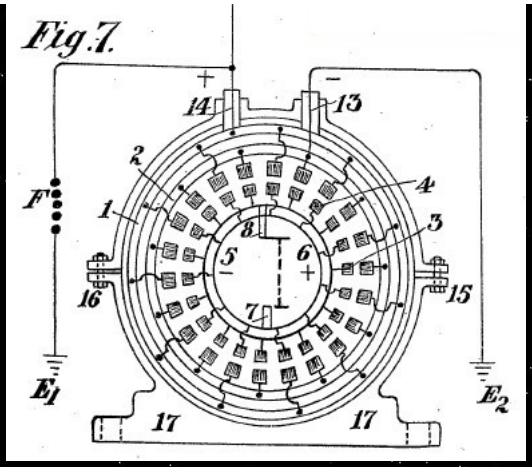


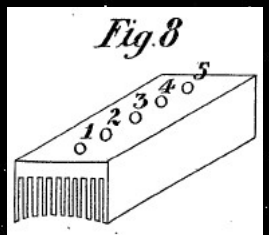
Figure 7 shows a four polar transformer. It consists of a metal casing, the lower half of which is fastened with the foundation plates. 17 to the support or foun half, the cover, is connected by bolts 15 and 16 This upper sleeve or case is insulated from the under part. Two rings 1 and 2 are cylindrically constructed in th 1 is metallically connected with the collector and the ring 2 with the earth. On both rings and an equal number of stator surfaces are mounted side by side from one another and thus form an electrostatic field similar to the electromagnetic in many alternating current machines. The rotor consists of the similarity o 6 on which an equal number of rotor surfaces are fixed. By the brushes 7 and 8 The charge is conveyed by the conductor 14 to and by 13 away. Alternating cu the rotor, the periods of time are rotated by revolutions per second.

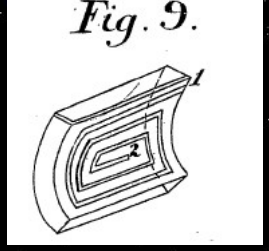
This article was previously published under Q140870 and was used as an alternative to a conversion to the friction. To the effect of the considerable energy caused by a conductor being moved through strongly electrostatic fields since the electrostatic lines of force must be cut to the right angles and that to apparatus should not only be regarded as a transformer, but also as an energy producer, with the difference that the excitation is here, instead of by means of ele entire system may, to some extent, be applied with a dynamo in which the excitation takes place. It was further ascertained that this way of using the atmos produced as a result of suction on the collector network.

The effects which in this instrument became evident are extremely interesting and open to the future. Merely that these transformers become already the extrer apparatus. If you are a future manufacturer, you will be able to produce a certain quantity of energy which may be constructed in the future. according to system.

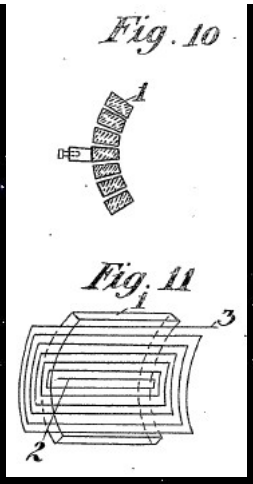
The results of the examinations made for this may be construed as follows.

(1) If solid electrodes (condenser surfaces, rotor and stator surfaces) are used they become hot. Ribbed form electromagnetism Figure 8, but not entirely rer allows the surface of the condenser plate to be enlarged or increased; the electrodes may be fastened in a simple manner on the under frame by perforation 1, 2,

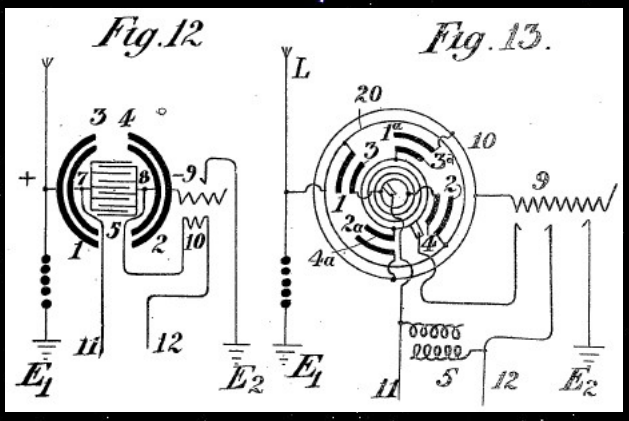




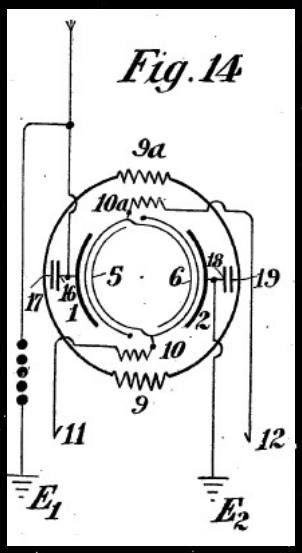
(2) If nicks or notches in spiral form as shown in Figure 9 seen from the side in Figure 10 in section are employed, not only is the transformer effect greater bu their movement than a simple commutator action would require.



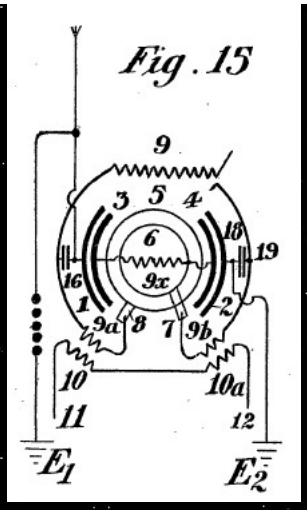
(3) The greatest effect is obtained if the rotor and stator surfaces are wound into a flat spiral form of suitably thick wire, and in that a way that the inductive ef with the capacity suitable periodicity. In practice this is done by spiral wire (see Figure 11) so that a smooth pole is similar to that in phase motors.



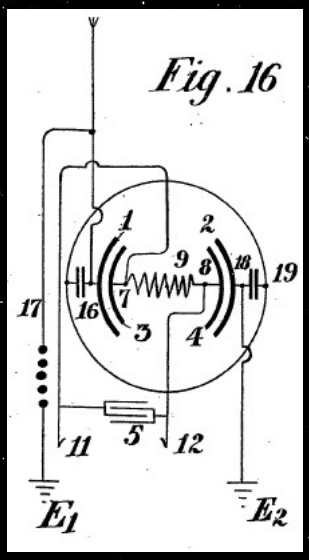
The aerial wire is shown in Figure 13. The aerial wire is shown in Figure 13. The aerial wire is connected to the ring. The inductive earth pole is also connec ring 10 from which again two, poles 1a and 2a are branched off. Of course in the same manner any suitable number of poles may be branched of. In similar ma two poles fastened to one another (3 and 4 and 3a and 4a) connected with separate collector rings. From these two rings the current is collected by means of induced alternating current is however directly metallically connected with an inductive earth stator conductor over an induction coil 9. In parallel with the c sparkless oscillatory circuit that can be applied to the exciting current in the stator. This produces however, a periodic alteration of the charge according to the rotor currents in consequence of which the stator charge also commences with resonance oscillations and if the stator and rotor surfaces are calculated to ar oscillations of waves of similar length the form of which is dependent on the amplitude of the main alternating current and is caused by the number of the pol per second. Thus an alternating current of, for example, 100 periods of time is formed, the separated periods of which are formed by undamped oscillations o of alternations. In Figures 14-16 four other diagrams of converters are shown, the object of which is not to produce the usual alternating current, but os frequency.



The main difference of these systems from the one that is already present in the stator pole 1 (Figure 14) and one pole 16 of the condenser 17 and the earth con second stator pole 2 and the pole 18 of the condenser 19. The other poles of these condensers 17 and 19 are short circuited through a ring over two inductive p 9a with one another. The secondary coils form the rotor conductors 10 and 10a. The rotor itself is constructed in the manner shown in Figure 6. In similar man stator surfaces may also be formed. The collector rings of the rotor with the two brushes for the collecting current are shown in order to simplify the drawings. maximum action by the connection of the two alternating current and the alternating current produced in the rotor on the stator circuit, with a correct calculati and the self-induction may be obtained. The kind of current production will be similar to that described for Figure 12.

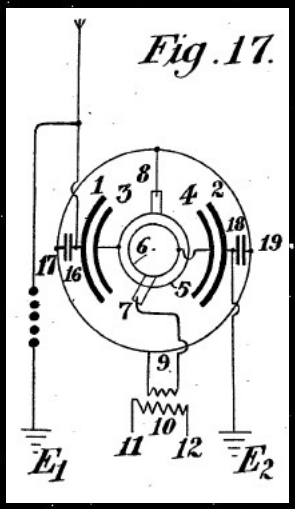


The novelty of the converter illustrated in Figure 15 consists mainly of the current in the rotor is not directly employed, but only serves the excitation of the pri 9b. The working current is produced in the secondary coils 10 and 10a and further conducted through the 11 and 12 conductors. The stator current may b regulatable inductive resistance to the same resonance as the rotor current.



In Figure 16 a very similar system is shown in Figure 14. The condenser 5 is connected in parallel with the converter; and in the rotor a short circuited osc formed which gives extraordinarily good results and is simple in construction.

The inductive resistance may be considered as primary coil used outside the rotor and short circuit (see Figure 17).



The last six types serves only for producing oscillations of a high number of alternations. If it be desired to be ordinary alternating current there complicat arrangements are not required as the types illustrated in Figures 1 to 11 suffice. It is self-evident that these arrangements may be altered in various ways.
We have been able to describe this as well as the fact that we are doing it, we declare that what we claim is: --- [Claims not included here]